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Progress in the Prevention and Control of Air Pollution in 1984

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Progress in the Prevention and Control of Air Pollution in 1984

Control Programs Development Division

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air and Radiation
Office of Air Quality Planning and Standards
Research Triangle Park, NC 27711

November 1985

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CONTENTS

Page

PREFACE.. v

I. INTRODUCTION AND SUMMARY

- A. Overview I-1
- B. Air Quality Trends, Monitoring, and Modeling.......... I-1
- C. Air Pollution Research Programs...................... I-3
- D. Development of National Ambient Air Quality Standards. I-4
- E. Regulatory Assessment of Toxic Air Pollutants......... I-4
- F. Status of Air Quality Management Programs............. I-5
- G. Control of Stationary Source Emissions................ I-8
- H. Stationary Source Compliance.......................... I-9
- I. Control of Mobile Source Emissions.................... I-10
- J. Litigation.. I-11

II. AIR QUALITY TRENDS, MONITORING, AND MODELING

- A. National Air Quality and Emission Trends.............. II-1
- B. Ambient Air Monitoring................................ II-3
- C. Air Quality Modeling.................................. II-6
- D. Integration of Air Data Systems....................... II-9
- E. Emission Factor Development........................... II-9
- F. National Dioxin Study................................. II-10

III. AIR POLLUTION RESEARCH PROGRAMS

- A. Introduction.. III-1
- B. General Air Pollution Research Activities............. III-1
- C. Acid Deposition Research Activities................... III-6
- D. Energy-Related Research Activities.................... III-8

IV. DEVELOPMENT OF NATIONAL AMBIENT AIR QUALITY STANDARDS..... IV-1

V. REGULATORY ASSESSMENT OF TOXIC AIR POLLUTANTS............. V-1

VI. STATUS OF AIR QUALITY MANAGEMENT PROGRAMS

- A. Development of Policy and Regulations................. VI-1
- B. Prevention of Significant Deterioration and Nonattainment New Source Review Activities............ VI-4
- C. Implementation Overview and Assistance................ VI-6
- D. Air Pollution Training................................ VI-12

VII. CONTROL OF STATIONARY SOURCE EMISSIONS

A. New Source Performance Standards (NSPS)............... VII-1
B. National Emission Standards for Hazardous Air Pollutants (NESHAP)................................ VII-1
C. Delegation of NSPS and NESHAP......................... VII-2
D. BACT/LAER Clearinghouse............................... VII-3

VIII. STATIONARY SOURCE COMPLIANCE

A. General... VIII-1
B. Litigation.. VIII-3
C. Continuous Compliance................................. VIII-4
D. Timely and Appropriate Enforcement Response........... VIII-5
E. Civil Penalty Policy.................................. VIII-5
F. Compliance by Federal Facilities...................... VIII-6
G. List of Violating Facilities.......................... VIII-6

IX. CONTROL OF MOBILE SOURCE EMISSIONS

A. Introduction.. IX-1
B. Standard Setting...................................... IX-2
C. Preproduction Compliance.............................. IX-3
D. Inspection/Maintenance................................ IX-4
E. Mobile Source Enforcement............................. IX-4
F. Imports... IX-6

X. LITIGATION

A. Introduction.. X-1
B. Stationary Source Cases............................... X-1
C. Mobile Source Cases................................... X-3
D. District Court Cases.................................. X-3

XI. REFERENCES... XI-1

PREFACE

The Clean Air Act, as amended, authorizes a national program of air pollution research, regulation, and enforcement activities. This program is directed at the Federal level by the U.S. Environmental Protection Agency (EPA). However, primary responsibility for the prevention and control of air pollution at its source continues to rest with State and local governments. EPA's role is to conduct research and development programs, set national standards and regulations, provide technical and financial assistance to the States, and, where necessary, supplement State implementation programs.

Section 313 of the Clean Air Act requires the Administrator to report on measures taken toward implementing the purpose and intent of the Act. This report covers the period January 1 to December 31, 1984, and describes the issues involved in the prevention and control of air pollution and the major elements of progress toward that goal that have been made during that time. In addition, this report also includes two other EPA reports to Congress required under the Clean Air Act, as amended:

1. Section 306 report on Federal procurement and violating facilities (Chapter VIII), and

2. Section 202(b)(4) report on measures taken in relation to motor vehicle emissions control (Chapter IX).

I. INTRODUCTION AND SUMMARY

A. OVERVIEW

This report describes the progress that the Environmental Protection Agency (EPA) has made in the prevention and control of air pollution during 1984. The following paragraphs summarize the contents of the remaining chapters of this report, especially insofar as those chapters illuminate current understanding of air quality problems, controls, and administrative apparatus. Since it takes approximately 1 year to assemble, analyze, and report air quality and emissions data on a national basis, the latest air quality and emissions data available for this report are for the year 1983.

B. AIR QUALITY TRENDS, MONITORING, AND MODELING

All of the pollutants showed improvements in air quality and emissions between 1975 and 1983. However, ozone air quality levels increased significantly between 1982 and 1983. Specific details on air quality and emissions levels for each of the pollutants to which ambient air quality standards apply are as follows:

- Annual average ambient total suspended particulate (TSP) levels decreased 20 percent from 1975 to 1983, while TSP emissions decreased 33 percent.

- Annual average ambient levels of sulfur dioxide (SO_2) decreased 36 percent between 1975 and 1983 and total sulfur oxide emissions decreased 19 percent.

- Ambient carbon monoxide (CO) levels decreased 33 percent between 1975 and 1983, although there was little change between 1982 and 1983. Total CO emitted during this time decreased 16 percent.

- Average ambient nitrogen dioxide (NO_2) levels decreased 4 percent between 1975 and 1983. Between 1979 and 1983 both ambient NO_2 levels and nitrogen oxide emissions showed reductions of 15 and 8 percent, respectively.

- The composite average of the second-highest daily maximum 1-hour ozone (O_3) values decreased 8 percent between 1975 and 1983, largely due to the change in the calibration procedure which took place between 1978 and 1979. In the post calibration period (1979-1983), O_3 levels increased slightly (2 percent). Between 1982 and 1983, however, O_3 levels increased 11 percent due to a combination of an increase of 3 percent in volatile organic compounds (VOC) emissions and meteorology which was generally more conducive to ozone formation in 1983 than in 1982.

- Ambient lead levels decreased 67 percent between 1975 and 1983. This is consistent with a 68 percent decrease in overall lead emissions and a 75 percent reduction in lead consumption in gasoline.

EPA promulgated regulations in 1979 which required States to establish and operate air monitoring networks and to report the data to EPA. Two types of permanent stations are provided for in the regulations--State and Local Air Monitoring Stations (SLAMS) and National Air Monitoring Stations (NAMS). The SLAMS, which were designed to meet the overall monitoring requirements of State implementation plan (SIP) activities, were required to meet all provisions of the regulations by January 1, 1983. Through December 1984, 4,693 SLAMS monitors out of a total operating network of 4,724 monitors met all requirements of the regulations. The NAMS, which are a subset of the SLAMS network, are designed to provide a national monitoring network as required by Section 319 of the Clean Air Act (Act). Through December 1984, 1,347 NAMS monitors out of a total planned network of 1,360 monitors met all requirements of the regulations.

During 1984, EPA continued its program to evaluate several categories of air quality models. The evaluation of complex terrain models was completed. The results clarified the limitations of these models and reaffirmed the urgent need for output from EPA's Complex Terrain Model Development Program. The evaluations of long-range transport models and mobile source models were initiated and will be completed in 1985. Efforts to expand EPA's internal capability to routinely evaluate models on a broader variety of data bases was continued and the identification of effective graphical techniques to present statistical performance information on models was initiated. Multi-year cooperative agreements with the States of New York and Connecticut were initiated to evaluate strategies for the control of photochemical air pollutants in the New York metropolitan area. State-of-the-art photochemical modeling techniques will be used in this effort which will extend into 1986. Efforts to improve guidance on air quality models and to ensure consistency in their use were continued.

In 1984, work progressed on the air quality component of the Aerometric Information Reporting System (AIRS). This system is an integrated data system that will replace entirely the existing data bases, files, and software now used by EPA for storing and retrieving ambient air quality data, stationary source and emissions data, and source compliance data.

EPA continued to support State efforts to develop emission control strategies by publishing emission factors on various pollutants including potentially toxic pollutants. Emphasis was placed on sources of particles less than 10 microns in size and on sources of acrylonitrile, carbon tetrachloride, chloroform, ethylene dichloride, formaldehyde, nickel, and chromium.

Also in 1984, EPA initiated the National Dioxin Study to assess the potential extent of contamination of the environment with chlorinated dioxin compounds.

C. AIR POLLUTION RESEARCH PROGRAMS

EPA's air pollution research program provides scientific data bases, methodologies, assessments, models, emission reduction technologies, and corresponding quality assurance support to develop and implement air quality standards and to ensure compliance with them. The research program focuses on the six air pollutants for which national ambient air quality standards (NAAQS) have been established and on potentially hazardous air pollutants which are defined as pollutants which may cause irreversible or reversible incapacitating illness and for which an ambient air quality standard has not been established.

In 1984, EPA completed a number of general air pollution research activities. The second external review draft of the criteria document for lead and the first external review draft of the criteria document for ozone and other photochemical oxidants were completed. The addendum to the 1979 criteria document for CO was also published. Final health assessment documents were completed for carbon tetrachloride, coke oven emissions, chromium, inorganic arsenic, manganese, mercury, and methyl chloroform. Three articles were published on research responding to critical data gaps in the dose-response data base for SO_2 and O_3. Studies designed to determine whether diesel emissions are carcinogenic, and if they are, how potent they are, were completed. EPA also developed plans for a long-term, interdisciplinary integrated air cancer project during 1984. The purpose of the project is to provide an improved capability for performing cancer risk assessments on airborne pollutants. The goals of the program are to identify the principal airborne carcinogens, determine which emission sources are major contributors of carcinogens to the ambient air, and improve the estimate of comparative human cancer risk from specific air pollution emission sources. In addition, in order to improve urban scale ambient air quality models, a protocol for developing a reactivity classification system for VOC's was prepared in 1984. This protocol will enable EPA to determine the extent that specific VOC's contribute to the formation of O_3. Also in 1984, EPA conducted research activities related to characterizing gaseous and particulate mobile source emissions from heavy-duty diesel and gasoline-powered trucks and buses.

Research to develop methods for monitoring various pollutants focused on particulate matter (PM) in accordance with the proposed change in the particulate matter air quality standard from total suspended particulates to PM_{10}. Standard operating procedures for sampling ambient particulate matter were developed, and a detailed PM_{10} inlet comparison study was conducted. Research activities related to controlling particulate emissions focused on improving the performance, reliability, and cost-effectiveness of electrostatic precipitators and fabric filters in collecting small particles. Other research activities in 1984 related to controlling pollutant emissions were directed toward the use of flue gas desulfurization (FGD) systems for control of SO_2, utilization of low nitrogen oxide (NO_x) burners, in-furnace NO_x reduction, air staging/recirculation and catalytic reduction for control of NO_x, the use of flares for VOC control, and the identification of major sources of hazardous air pollutants and applicable control technologies.

The EPA also conducted research activities in 1984 in the area of acid deposition. The objective of the acid deposition research program is to develop the necessary data to fully understand the sources and characteristics of acid deposition, as well as the extent of damage or potential damage. In 1984, EPA completed the Eastern Lakes field survey. This study will enable EPA to determine what percentage of lakes and streams in the susceptible regions are acidic or have low alkalinity. In addition, in 1984 EPA also conducted research to assess the geochemical and physical characteristics of soils in order to better understand the rate and extent of acidification of surface waters.

The EPA's energy-related research activities in 1984 focused on the development of the limestone injection into the multi-stage burner (LIMB) emission reduction technology that is designed to simultaneously reduce both sulfur oxide (SO_x) and NO_x. Beyond the possible acid rain retrofit applications, these developments may make the LIMB technology suitable for use as a low cost control alternative for meeting new source performance standards for boilers operating with low-sulfur coal.

D. DEVELOPMENT OF NATIONAL AMBIENT AIR QUALITY STANDARDS

The 1977 Clean Air Act Amendments require EPA to review and, if necessary, revise the NAAQS on a 5-year basis. Reviews of all existing NAAQS were in progress in 1984. In February, EPA proposed to retain the existing primary and secondary NAAQS for NO_2. The EPA also proposed not to set a short-term NO_2 standard since data to establish such a standard were not adequate and the current annual standard protects against peaks of concern. In March, EPA proposed changes to the NAAQS for particulate matter (PM). For the primary standard, EPA proposed to replace the current TSP standard with a standard that includes only those particles less than 10 micrometers (PM_{10}). The proposal indicated that the EPA intended to select final primary standards from ranges of 50-65 micrograms per cubic meter (ug/m^3), annual arithmetic mean, and 150-250 ug/m^3, maximum 24-hour concentration. The EPA proposed to retain a secondary TSP standard from the range of 70-90 ug/m^3, annual average, and to revoke the current 24-hour secondary standard.

E. REGULATORY ASSESSMENT OF TOXIC AIR POLLUTANTS

The EPA continued to evaluate a number of toxic and potentially toxic substances in 1984. Decisions were published not to regulate toluene and polycyclic organic matter (POM) under the Act. For toluene, this decision was based on a judgment that currently available information did not indicate a threat to public health at concentrations found in the ambient air. For POM, there was considerable uncertainty as to the magnitude of the cancer risk to the public, as well as difficulties in devising an appropriate regulatory program for several important POM source categories. Also in 1984, coke oven emissions were listed as a hazardous air pollutant under Section 112 of the Act.

As part of the EPA's effort to develop a more comprehensive and effective air toxics control program, a draft report on the nature and scope of the national air toxics problem was completed and issued for public comment. The study indicates that while maximum individual risks tend to be associated with major point sources, the great majority of the predicted cancer incidence associated with air pollution is not mitigated by point source controls. This study and follow-on analyses will be used to shape future policy directions in the air toxics area.

As part of the program for regulating benzene (listed as a hazardous air pollutant under Section 112 of the Act), EPA has been assessing the need to regulate sources in the gasoline marketing chain. An analysis of regulatory strategies for the gasoline marketing industry was published for public comment in August 1984.

Also in 1984, substantial activities were undertaken to establish a National Air Toxics Information Clearinghouse in an effort to improve communication among EPA, State, and local agencies. The goal of the Clearinghouse is to disseminate knowledge about activities under way to solve toxic air pollutant problems and to reduce duplication of effort. The EPA began publishing the Air Toxics Information Clearinghouse Newsletter in December 1983 and published five issues in 1984. Other publications in 1984 were a bibliography of EPA reports relevant to toxic air pollutants, a bibliography of health and risk assessment information, a listing of EPA's ongoing research and regulatory development projects, and an interim report summarizing data submitted by State and local agencies.

F. STATUS OF AIR QUALITY MANAGEMENT PROGRAMS

As mentioned previously, EPA proposed revised NAAQS for particulate matter in March 1984. The proposed standards consist of primary standards that would apply to a size range of particles nominally 10 micrometers and smaller in diameter (PM_{10}), and an annual TSP secondary standard. The focus of the proposed primary standards on a new particle size range necessitated preparation of regulations, policies, and technical guidance so that SIP's for PM_{10} can be developed by the States. In 1984, EPA prepared a Federal Register notice which solicited public comment on a number of considerations relative to implementing the proposed PM_{10} standards. The Federal Register package was in preparation at the end of 1984 with publication anticipated early in 1985.

In December 1982, a number of petitioners filed suit to compel EPA to promulgate State plans for visibility protection under Section 110(c) of the Act for those States which had not submitted such plans as required by rules published by EPA in 1980. During 1983, EPA and the Environmental Defense Fund negotiated and signed a settlement agreement which was accepted by the court on April 20, 1984. The settlement agreement called for a two-part implementation of the 1980 rules. New source review (NSR) requirements and a visibility monitoring strategy were proposed for the deficient States on October 23, 1984. The provisions will be promulgated in 1985 to meet the first part of the settlement agreement. In compliance with the second part of the agreement, the SIP's for the States will be reviewed in 1985 to determine their adequacy for meeting the remainder of the rules.

In November 1984, EPA proposed revised regulations under Section 123 of the Act limiting the extent to which stationary sources may rely on stacks in excess of "good engineering practice" ("GEP") or on other dispersion techniques in lieu of more stringent emission controls. These regulations, known as the "stack height" regulations, were revised in response to a court mandate which followed a challenge by parties to regulations promulgated under Section 123 by EPA in 1982.

In 1984, EPA continued to emphasize the importance of quality transfers of the prevention of significant deterioration (PSD) and NSR programs since the EPA believes that the critical growth decisions associated with the preconstruction review process should be made at the State and local level. Although several transfers are presently being delayed by litigation and resulting policy clarification, significant progress was made nevertheless. As of the end of 1984, 40 State and local agencies had either full delegation of the PSD program or a PSD SIP, and 8 more had partial responsibility for the PSD program.

In 1980, EPA promulgated a list of 30 source categories for which fugitive emissions would be included in PSD applicability determinations. Surface mining operations were not among these. The EPA was sued on this point and the court remanded this matter to EPA for explanation of its position. On October 26, 1984, EPA published final action on this issue, reaffirming its current requirements for the inclusion of fugitive emissions in calculating whether a source is "major" for purposes of NSR. The EPA further proposed to extend the requirements for inclusion of fugitive emissions to surface coal mining operations. This proposal remained open for public comment at the end of 1984.

The National Air Audit System (NAAS) was developed in 1983 as a joint effort by EPA, the State and Territorial Air Pollution Program Administrators (STAPPA), and the Association of Local Air Pollution Control Officials (ALAPCO). The primary goals of the NAAS are to identify any obstacles that are preventing State and local air pollution control agencies from implementing effective air quality management programs and to provide EPA with quantitative information for use in defining more effective and meaningful national programs. The NAAS was implemented initially in 1984 and a total of 68 State and local air pollution control agencies were audited by teams composed primarily of EPA Regional Office personnel. The 1984 air audit program focused attention upon various aspects of the national air quality management program that need improvement. In some cases, it showed the need for improved guidance from EPA and, in other cases, it indicated areas where State and local control agencies need to remedy deficiencies. A report detailing the results of the 1984 air audit program was published by EPA in December 1984.

In 1984, EPA continued to emphasize the attainment of NAAQS for those areas of the country which were deficient in this area. Some areas of the country that are currently nonattainment for carbon monoxide and ozone were granted extensions of the attainment date until 1987 if they submitted SIP's containing certain provisions. Forty-seven areas in 31 States that could not demonstrate timely attainment of the NAAQS for ozone or carbon monoxide were allowed an extension of the attainment date until December 31, 1987. By September 30, 1984, the date by which all extension areas SIP's were to be finally approved or disapproved in the Federal Register, EPA had published final approval in whole or in part for 35 plans. None of the plans were finally disapproved. As of December 31, 1984, final action on one of the 12 remaining submittals had been published and final action on another was pending.

Certain areas of the country which did not receive an attainment date extension were found by EPA not to have attained applicable air quality standards by December 31, 1982, as required. In 1984, EPA issued calls for SIP revisions for a total of 40 areas in 21 States. These calls require that the States revise their SIP's for these areas within 1 year. Revised SIP's are required to demonstrate attainment as expeditiously as possible.

The EPA continued to work toward assuring that all areas of the country have acceptable lead SIP's in place. For the 56 States and territories at the end of 1984, 45 have submitted complete lead SIP's on which EPA published final rulemaking; 9 have submitted draft or final SIP's that cover complete States, but on which EPA has not yet completed rulemaking; and 2 have not submitted final SIP's that cover complete States.

The EPA undertook a number of activities related to emissions trading in 1984. By the end of the year, EPA had approved 37 bubbles and proposed to approve another 11 bubbles resulting in an estimated savings of more than $200 million over the cost of conventional pollution controls, with many producing energy savings and greater emission reductions than traditional regulation. In addition, as of December 31, 1984, EPA had approved generic trading rules for nine States or local areas which allow these States to approve bubbles without prior Federal approval. In total, over 200 bubbles were approved, proposed, under review, or under development in 29 States throughout the nation through the end of 1984.

Emissions reduction banking allows firms to get credit for surplus emission reductions and to store such emission reduction credits (ERC's) in a legally-protected manner. ERC's can be "banked" (stored) and used in bubble applications to meet control requirements for existing plants more flexibly and efficiently. As of December 31, 1984, EPA had approved formal banking rules for four States and local areas and four Statewide or local area banking programs had been proposed.

In 1984, EPA initiated an effort to explore the potential issues that could arise in implementing possible acid deposition control programs. State and local air pollution control agencies submitted 53 proposals to conduct a variety of projects to analyze various implementation issues. EPA eventually selected 31 projects for funding. Work on the projects will begin in 1985.

In 1984, EPA continued to provide technical training in the abatement and control of air pollution. This training included short course presentations of 3 to 5 days in length, self-study courses, technical assistance to others who conduct training, and the support of the traineeships and fellowships for graduate air pollution training.

G. CONTROL OF STATIONARY SOURCE EMISSIONS

In the area of stationary source controls, work progressed on the development of emissions standards for those major source categories not yet regulated under new source performance standards (NSPS) and on the revision of various NSPS as appropriate. NSPS for five new categories were promulgated in 1984 and existing NSPS for four categories were revised. Eighteen promulgations are planned for 1985. Control techniques guidance documents for three source categories also were published in 1984.

Section 112 of the Act authorizes EPA to establish national emission standards for hazardous air pollutants (NESHAP). Regulatory activities under this section limiting emissions of arsenic, benzene, asbestos, mercury, vinyl chloride, chromium, and coke oven emissions were under way in 1984. With regard to benzene, a NESHAP for benzene emissions from coke oven by-product plants was proposed in 1984 and a NESHAP for benzene equipment leaks from fugitive sources was promulgated. Proposed regulations for control of benzene emissions in maleic anhydride plants, ethylbenzene/styrene plants, and benzene storage facilities were withdrawn. The withdrawal was based on the fact that public health risks for these sources were determined not to be significant. Standards proposed under Section 112 for four sources of radionuclides were withdrawn, with revised standards for three subsequently being issued.

Also in 1984, EPA continued to make progress in delegating responsibility for implementing NSPS and NESHAP programs to the State and local air pollution control agencies. At the end of 1984, approximately 92 percent of applicable NSPS and 95 percent of applicable NESHAP had been delegated.

The EPA also continued to maintain the Best Available Control Technology/ Lowest Achievable Emission Rate (BACT/LAER) Clearinghouse in 1984 in order to assist State and local agencies in their BACT and LAER determinations.

H. STATIONARY SOURCE COMPLIANCE

The EPA closely monitors the compliance status of about 30,000 stationary sources of air pollution. Approximately 26,500 of these sources are SIP sources, about 2,500 are NSPS sources, and about 1,000 are NESHAP sources. At the end of 1984, as has been the case since the late 1970's, the compliance rates were high and generally stable. SIP sources had a compliance rate of over 92 percent, NESHAP sources were over 90 percent, and NSPS sources were over 88 percent.

The Act provides a variety of administrative enforcement mechanisms for dealing with both special situations and relatively easily corrected violations. During 1984, EPA issued immediate compliance orders under Section 113(a) of the Act to 84 sources and issued delayed compliance orders under Section 113(d) to 7 sources. In addition, EPA filed 56 civil actions in 1984 against stationary sources for Act violations and a total of 85 such actions were pending at the end of the year.

An area of increasing focus by EPA is the regulation of sources of VOC's. During 1984, EPA completed a major effort to identify all major VOC sources and began the process of verifying the compliance status of sources added to the VOC inventory.

On April 6, 1984, the stationary source compliance program issued an asbestos NESHAP strategy for ensuring compliance at building demolition and renovation sites. The strategy addresses training, inspection techniques, enforcement mechanisms, and other aspects essential for a successful program of compliance. In 1984, EPA initiated civil actions against 21 companies found in violation of asbestos regulations. At the end of 1984, three cases were concluded. In addition, on July 11, 1984, EPA issued a vinyl chloride NESHAP enforcement strategy which facilitates the development of civil complaints against violators of vinyl chloride regulations. EPA filed five civil actions during 1984 for violations of the vinyl chloride regulations.

Several significant enforcement actions were concluded by EPA in 1984. These included an action against Kaiser Steel Corporation for visible emission standard violations which resulted in a civil penalty of $825,000 being levied against the company, a settlement with the Jones and Laughlin Company that included new schedules for the installation of controls and demonstrations of compliance, and enforcement of a decree requiring the City of Providence, Rhode Island, to control particulate emissions from its sewage treatment plant.

In 1984, EPA developed a strategy to assure continuous compliance by stationary sources. The strategy builds upon current use of on-site inspections as a major compliance monitoring method and outlines a number of areas, such as unannounced inspections, better targeting of sources, and improved inspection techniques, in which inspections can be made more responsive to determining the compliance status of sources. The strategy also calls for an increased use of continuous emissions monitoring (CEM) data, supported by a major EPA initiative to enhance CEM usage. To implement this strategy, EPA has been conducting pilot studies to determine the most promising techniques to address the problem of assuring continuous compliance. In 1984, EPA completed the first phase of the Virginia pilot inspection system. The study, conducted in the Valley of Virginia region of the State, looked at methods to improve the effectiveness and efficiency of the inspection progress.

I. CONTROL OF MOBILE SOURCE EMISSIONS

With the achievement of effective reductions of passenger car emissions, EPA has increasingly turned its regulatory focus toward the development of parallel standards for heavy-duty trucks and other commercial vehicles. Accomplishments in this area during 1984 included publishing proposed regulations for particulate and NO_x emissions for heavy-duty diesel engines. In addition, EPA provided manufacturers with extensive support to assure that the implementation in model year 1985 of new and more stringent standards for heavy-duty vehicle exhaust hydrocarbons and carbon monoxide and evaporative hydrocarbons would be met. In 1984, EPA also commenced the development of noncompliance penalties for those engine families unable to meet the standards applicable to a given model year.

In the category of light-duty vehicles and light-duty trucks, the primary focus of EPA in 1984 was in the area of the control of diesel particulate emissions. EPA promulgated a regulation delaying particulate emission standards for light-duty cars and trucks from 1985 to 1987, in order to allow time for manufacturers to develop trap oxidizer technologies for these vehicles.

In August 1984, EPA proposed a rule which would expedite the reduction of allowable lead in gasoline. This action was prompted by accumulating evidence of the health and other effects associated with the presence of lead in the gasoline. Finalization of this rule is expected early in 1985.

An effective strategy for dealing directly with in-use emissions problems is the establishment of motor vehicle inspection and maintenance (I/M) programs. In 1984, EPA continued to promote the implementation of I/M programs in each locality where it is required by the Act. By the end of the year, 43 of 52 areas had initiated I/M programs. In addition, in order to assure that operating I/M programs actually achieve the planned emissions reductions, EPA initiated in 1984 a systematic I/M auditing plan to pinpoint and lead to correction of any major deficiencies in individual I/M programs.

Section 207(c) of the Act authorizes EPA to order the recall of vehicles if a substantial number of any class of vehicles do not conform to emissions standards. During 1984, 1,206,900 vehicles were recalled either by direct order of EPA or as a result of an EPA investigation. In the same period, manufacturers voluntarily recalled 867,770 vehicles to correct emissions problems.

The EPA has responsibility for enforcing Section 211 of the Act, relating to the regulation of fuels and fuel additives. One of the regulations under this section of the Act is aimed at protecting the catalytic converters on 1975 and later model year cars. EPA has established a nationwide fuels enforcement program to ensure that affected retail outlets comply with these regulations. EPA conducted 12,500 inspections under this program during 1984.

The EPA is also responsible for carrying out programs designed to deter tampering with vehicle emissions control systems or using leaded fuel in vehicles which require unleaded. Surveys undertaken by EPA have shown tampering and fuel switching to be continuing serious problems and that about 28 percent of the vehicle fleet is subject to gross tampering, and about 16 percent to fuel switching. In order to combat this problem, EPA has promoted the implementation of State and local antitampering enforcement programs. In 1984, nine local antitampering programs were set up as a result of this initiative.

J. LITIGATION

The most important Clean Air Act case of the year was the Supreme Court decision in Chevron v. Natural Resources Defense Council. In this opinion, the court held that EPA could legally allow States to exempt factories from "modification" review if an emissions increase at one facility within the factory was offset by emissions decreases at another. In effect, the opinion allows the entire factory to be treated as a "source" for new source review purposes. In a second Supreme Court opinion, Stauffer Chemical Corp. v. EPA, the court let stand a lower court ruling that EPA could not designate employees of contractors as EPA "representatives" entitled to conduct inspections under Section 114 of the Act.

In addition to these two Supreme Court decisions, the Federal Courts of Appeals handed down 11 decisions involving the Act in 1984. Of these, two involved the operations of the combined State and Federal mechanism for establishing "SIP's," two involved the workings of the

Act's "PSD" system, two involved measures for the control of sulfur oxides, and one involved the legal doctrine of "standing." Apart from these decisions, which all involved control of stationary sources of air pollution, 1984 also saw four decisions under the "mobile source" control provisions of Title II of the Act. EPA won six of these decisions and lost four. The remaining decision, though mixed, was basically favorable to EPA.

In addition, four district court cases decided in 1984 included Clean Air Act Issues. In one of these decisions, EPA was ordered to issue final radionuclide standards or delist radionuclides as a hazardous air pollutant.

II. AIR QUALITY TRENDS, MONITORING, AND MODELING

This chapter describes current trends in ambient air quality levels (the concentration of a given pollutant in the atmosphere), as well as trends in estimated emissions into the air of various pollutants. In addition, the chapter discusses the topics of air quality monitoring and air quality modeling. Data on ambient air quality levels and emissions are through 1983, the latest year for which EPA has complete statistics.

A. NATIONAL AIR QUALITY AND EMISSION TRENDS

National long-term (1975 through 1983) improvements can be seen for sulfur dioxide (SO_2), carbon monoxide (CO), and lead (Pb). Improvements can also be seen for nitrogen dioxide (NO_2) in the period 1979 through 1983 and for total suspended particulate (TSP) between 1978 and 1983. In contrast to the other pollutants, ozone (O_3) has increased slightly between 1979 and 1983 and has sharply increased between 1982 and 1983 through a combination of an increase in volatile organic chemical (VOC) emissions and meteorology which was generally more conducive to ozone formation in 1983 than in 1981 and 1982.

The trend in O_3 is complicated by a major drop in measured concentration levels which occurred between 1978 and 1979 largely due to a change in the O_3 measurement calibration procedure. Therefore, special attention is given to the 1979 through 1982 period, because the change in the calibration procedure is not an influence during this period.

The trend in TSP is complicated by the fact that the glass fiber filters used to collect TSP data were changed in 1978, 1979, and again in 1982. Although the filters used in 1978, 1982 and 1983 were comparable, the filters used during 1979, 1980 and 1981 were different. Therefore, special attention is given to the trend from 1978 to 1983, with less credence given to the intervening years.

All of the ambient air quality trend analyses which follow are based on monitoring sites which recorded data in at least 7 of the 9 years in the period 1975 through 1983. In each of these years, annual data completeness criteria also had to be met. As a result of these criteria, only a subset of the total number of existing sites are used for trend purposes.

Total Suspended Particulate (TSP) - Annual average TSP levels measured at 1510 sites decreased 20 percent between 1975 and 1983. This corresponds to a 33 percent decrease in estimated TSP emissions for the same period. TSP air quality levels generally do not improve in direct proportion to estimated emissions reductions, because air quality levels are influenced by factors such as natural dust, reentrained street dust, construction activity, etc., which are not included in the emissions estimates. Since

1977, the glass filters used at TSP monitoring sites have been centrally procured by EPA for the State and local agencies in order to obtain uniformity in TSP collection nationwide at reduced cost. The filters used in 1979, 1980, and 1981 were found to record higher values than the filters used in 1978 and 1982, because of higher filter alkalinity, which is related to artifact error. The filters used in 1978, 1982, and 1983 were supplied by the same manufacturer and found to be comparable based on similar alkalinity levels. Therefore, although the air quality values for 1979, 1980, and 1981 are probably biased high, the trend between 1978 and 1983 is due not only to reductions in TSP emissions, but also to more favorable meteorology in 1983. An analysis of meteorological conditions for 1983 indicated a potential for lower TSP concentrations due to abnormally high precipitation.

Sulfur Dioxide (SO_2) - Annual average SO_2 levels measured at 286 sites with continuous SO_2 monitors decreased 36 percent from 1975 to 1983. A comparable decrease of 43 percent was observed in the trend in the composite average of the second maximum 24-hour averages. An even greater improvement was observed in the estimated number of exceedances of the 24-hour standard, which decreased 92 percent. Correspondingly, there was a 19 percent drop in sulfur oxide emissions. The difference between emissions and air quality trends arises because the use of high sulfur fuels was shifted from power plants in urban areas, where most of the monitors are, to power plants in rural areas which have fewer monitors. Further, the residential and commerical areas, where the monitors are located, have shown sulfur oxide emission decreases comparable to SO_2 air quality improvements. These decreases in sulfur oxide emissions are due to a combination of energy conservation measures and the use of cleaner fuels in the residential and commercial areas.

Carbon Monoxide (CO) - Nationally, the second highest non-overlapping 8-hour average CO levels at 174 sites decreased at a rate of approximately 5 percent per year, with an overall reduction of 33 percent between 1975 and 1983, although there was little change between 1982 and 1983. An even greater improvement was observed in the estimated number of exceedances, which decreased 87 percent. CO emissions decreased 16 percent during the same period. Because CO monitors are typically located to identify potential problems, they are likely to be placed in traffic saturated areas that may not experience significant increases in vehicle miles of travel. As a result, the air quality levels at these locations generally improve at a rate faster than the nationwide reduction in emissions.

Nitrogen Dioxide (NO_2) - Annual average NO_2 levels, measured at 177 sites, increased from 1975 to 1979 and then began declining. The 1983 ambient NO_2 levels are 4 percent less than the 1975 levels. While the trend pattern in the estimated nationwide emissions of nitrogen oxides is similar to the NO_2 air quality trend pattern, nitrogen oxides emissions increased 2 percent between 1975 and 1983. Between 1979 and 1983, both ambient NO_2 levels and nitrogen oxide emissions showed reductions of 15 and 8 percent, respectively.

Ozone (O_3) - Nationally, the composite average of the second-highest daily maximum 1-hour O_3 values, recorded at 176 sites, decreased 8 percent between 1975 and 1983. The VOC emissions decreased 12 percent during the same period. The improvement in ozone levels, however, between 1975 and 1983 is largely due to the change in the calibration procedure, which took place between 1978 and 1979. In the period following the calibration change (1979 to 1983), ozone levels increased slightly (2 percent) between 1979 and 1983, and sharply (11 percent) between 1982 and 1983. The increase between 1982 and 1983 appears to be due to a combination of an increase of 3 percent in VOC emissions and meteorology which was generally more conducive to ozone formation in 1983 than in 1981 and 1982. The increase was observed all across the United States with the exception of the Northwestern States (EPA Region X). The patterns observed in changing ozone levels are similarly observed in the estimated number of daily exceedances of the ozone standard in the ozone season, which increased 6 percent between 1979 and 1983 and 46 percent between 1982 and 1983.

Lead (Pb) - The composite maximum quarterly average of ambient lead levels, measured at 61 urban sites, decreased 67 percent between 1975 and 1983. This sample of sites satisfied a minimum of 7 years of data in the 1975-83 time period and were heavily weighted by sites in Texas (39 percent). In all, a total of only 10 States were represented in the sample. In order to increase the number of sites and their geographical representativeness, lead trends were studied again over the 1980-83 time period. A total of 138 urban sites from 28 States satisfied the minimum data requirement of at least 3 out of the 4 years of data. An improvement in ambient lead concentrations of 34 percent was observed at these sites and for the 61 sites mentioned above over this same 1980-83 period. Even this larger group of sites was disproportionately weighted by sites in Arizona, California, Minnesota, Pennsylvania, and Texas. These 5 States accounted for 52 percent of the 138 sites represented. The lead consumed in gasoline dropped 75 percent from 1975-83, primarily due to the use of unleaded gasoline, catalyst equipped cars, and the reduced lead content in leaded gasoline. Likewise, trends in national lead emissions showed a drop of 68 percent.

B. AMBIENT AIR MONITORING

General

Section 110(a)(2)(C) of the Clean Air Act (Act) requires State Implementation Plans to include provisions for establishment and operation of systems for monitoring ambient air quality. In addition, Section 319 of the Act requires the development of uniform air quality monitoring criteria and methods and the establishment of an air quality monitoring system throughout the United States which uses uniform monitoring criteria and methods. To satisfy these requirements, EPA promulgated regulations in 1979 which required States to establish and operate air monitoring stations and report the data to EPA[1]. The two principal types of stations in the State networks are State and Local Air Monitoring Stations (SLAMS) and National Air Monitoring Stations (NAMS). The monitoring stations of the SLAMS and NAMS must adhere to the uniform monitoring criteria described in the regulation. These criteria cover quality assurance, monitoring methods, network design, and probe siting. January 1, 1981 was the deadline by which all NAMS were to meet all of the requirements in the regulations. The SLAMS had until January 1, 1983 to meet all of the provisions in the regulations.

Overall, State and local progress in meeting the requirements of the regulations continues to be excellent. Table 1 shows the status of the SLAMS network at the end of 1984. Of the 4724 operating monitors in the system, 4693 or 99 percent of the total monitors were meeting all requirements of the regulations. The remaining operating monitors should meet the requirements with some small changes in monitor siting and improvements in their standard operating procedures. Table 2 shows that of the 1360 planned NAMS, 1347 or 99 percent were in operation and were meeting all requirements of the regulations through December 1984. Table 3 lists, by pollutant, the number of SLAMS and NAMS.

Table 1. SLAMS Status through December 1984

	Number of Monitors	Percent of Network
Total planned network for 1985*	4567	-
Monitors operational through 12/84	4724	-
Monitors in operation meeting all requirements of the regulations	4693	99

* Includes NAMS monitors and reflects small reductions planned by a number of control agencies.

Table 2. NAMS Status through December 1984

	Number of Monitors	Percent of Network
Total planned network	1360	100
Monitors operational	1347	99
Monitors in operation meeting all requirements of the regulations	1347	99

Table 3. National Summary of Operating Air Monitoring Stations (as of 12/84)

Pollutant	SLAMS (including NAMS)	NAMS
TSP	2493	640
SO_2	564	218
NO_2	250	58
CO	433	113
O_3	598	213
Pb	386	105
TOTAL	4724	1347

Particulate Monitoring

To accompany the proposed revisions to the National Ambient Air Quality Standards (NAAQS) for particulate matter (PM) discussed in Chapter IV of this report, EPA on March 20, 1984, also proposed amendments to 40 CFR 58 (Air Quality Surveillance and Reporting Regulations)[2]. The proposed revisions to Part 58 would establish ambient air quality monitoring requirements for PM_{10} as measured by a new reference method proposed as Appendix J of 40 CFR Part 50 or an equivalent method. In addition, new network design and monitoring siting requirements were proposed for the secondary TSP standard. The proposed requirements are comparable to those already established for the other pollutants for which NAAQS have been set. These include requirements for reporting and assuring the quality of ambient PM_{10} data, designing monitoring networks, and the siting of samplers. Since most areas of the country did not have PM_{10} ambient monitoring data, EPA procured 662 PM_{10} samplers in late 1984 for distribution to State and local agencies. Specialized training was provided by EPA to State and local agency personnel on the operation and maintenance of the PM_{10} samplers. States will begin collecting ambient PM_{10} data in 1985. These data will be used by the States in developing PM_{10} State implementation plans which will be required upon promulgation of a PM_{10} NAAQS.

Nonmethane Organic Compounds (NMOC) Monitoring

During the summer of 1984 a new method for measuring the concentration of hydrocarbons in the ambient air was utilized in a 22 city study. The data from this study show that the new method yields a much more accurate measure of ambient hydrocarbon concentrations than previously available methods. The more accurate data will permit better estimates of the level of hydrocarbon control required in metropolitan areas to achieve the NAAQS for ozone. Several agencies have indicated that they want to make additional measurements in 1985. During 1985, EPA will provide technical support to these efforts and analyze the data collected during 1984 in greater depth.

C. AIR QUALITY MODELING

An air quality model is a set of mathematical equations that describes the atmospheric transport, dispersion, and transformation of pollutant emissions. By means of these equations, a model can be used to calculate or predict the air quality impacts of emissions from proposed new sources, emissions from existing sources, or changes in emissions from either of these source categories. These models are of great utility because they provide a means whereby the effectiveness of air pollution controls can be estimated before action is taken.

During 1984, a major EPA program to evaluate several categories of models was continued. This program was developed in response to recommendations of the American Meteorological Society under its cooperative agreement with EPA[3]. The evaluation of complex terrain models was completed[4] in a manner consistent with earlier evaluations of rural point source models and urban models. The full evaluations of eight short-term, long-range transport models and four mobile source models was initiated and will be completed in 1985. The evaluation of models for toxic air pollutants and industrial source complexes will also be initiated in 1985.

The evaluation of eight complex terrain models for two data bases, including both SO_2 and tracer measurements, clarified the limitations of these models. Generally, the models demonstrated a systematic bias toward overestimating the maximum concentrations for both data sets. Problems with model performance extend beyond plume impaction situations to a variety of meteorological conditions and averaging times. Only one of the models demonstrated some ability to predict with a range of reliability providing assurance that design concentrations would be neither overly conservative nor too lenient. However, one of the models frequently used as a screening technique indicated an accuracy typically acceptable for screening approximations. A peer scientific review of these models is also in preparation. Preliminary results indicate that these models are not up-to-date scientifically, even though one did seem to provide a superior statistical performance. Also, the need for improved diagnostic evaluation tools to better understand model performance was indicated. These results reaffirm the urgent need for a useful refined model that should result from EPA's complex terrain model development program.

The EPA is also automating a procedure for generating tabulations of model performance statistics and for producing graphic displays that contrast performance levels among models. The model evaluation support system which provides for storage and retrieval of ambient data bases and predicted concentrations and produces standardized tabular summaries of model performance was completed in 1984. Documentation and implementation of several additional data sets will be completed in 1985. The most effective graphic displays of the performance statistics have been selected. Utility routines to manage and plot selected pairs of performance statistics will be completed in 1985. These plots will be useful for intercomparing the performance of several models simultaneously and for displaying multiple performance statistics for any one model.

Cooperative agreements have been initiated with the States of New York and Connecticut to perform photochemical modeling of the New York metropolitan area, including parts of New Jersey and Connecticut. This effort, entitled "Oxidant Modeling for the New York Metropolitan Area Project" (OMNYMAP), will test existing and alternative control strategies for attaining the ozone NAAQS. As part of this analysis, the performance of the Airshed Model will be evaluated and its sensitivity to specific variations in model inputs will be tested. In this way, the most critical parameters affecting control strategies will be identified. This work is expected to continue into 1986.

Preliminary work on a technique to explicity consider the impact of model uncertainty on regulatory decisionmaking was completed in 1984.[5] The method for the Calculation of Uncertainty Estimates (CUE) was applied to a typical regulatory analysis and its sensitivity to various input factors was tested. The technique was found to be useful in succinctly characterizing model performance, estimating the probability of NAAQS attainment, and estimating the average emission rate allowable for achieving a desired probability of attainment. The technique is also useful for dealing with variations in acceptable probability levels and model bias and precision. In 1985, the applicability of the technique and its potential for routine use by air quality managers will be further explored.

Efforts to improve guidance on air quality models[6] and to ensure consistency in their use have also continued. Model clearinghouse activities were continued to ensure that use of nonguideline techniques does not lead to inconsistent regulatory decisions. A workshop was held with modeling contacts in EPA's ten Regional Offices to improve communications on the use of models and to resolve problems common to several Regions. In early 1985, the revised "Guideline on Air Quality Models" will be subjected to a public hearing and comment. The hearing will be conducted in conjunction with the Conference on Air Quality Modeling (Third) which is required at 3-year intervals by Section 320 of the Act. The guideline will be incorporated by reference in EPA's prevention of significant deterioration (PSD) regulations, with final promulgation expected in 1986.

Receptor Model Activities

During 1984, EPA continued its series of reports to describe the uses, capabilities, and limitations of specific receptor models. One such report was prepared and distributed.[7] In addition, a computer model (Chemical Mass Balance Model or CMB) and accompanying documentation were made available to the user community. Tests were initiated to determine sensitivity of CMB solutions to various input assumptions, and a catalog of chemical composition profiles for various sources of particulate matter was developed for use with the CMB. During 1985, EPA plans to subject the source catalog to extensive peer review and to continue with the CMB sensitivity tests. The end objective is to foster appropriate and consistent application of this model by State and local agencies. EPA also will continue with its series of reports describing specific receptor models.

Ozone Modeling

During 1984, EPA produced a guideline document describing how to use the Empirical Kinetics Modeling Approach (EKMA) with newer chemical mechanisms which reflect recent experimental data.[8,9] The EKMA is widely used by State and local agencies to estimate emission controls necessary

2o attain the ambient air quality standard for ozone. In addition, the computer software for EKMA was updated and improved. This software and its accompanying documentation has been widely distributed. Continuing efforts are under way to improve the EKMA model and to assist State and local agencies in its application.

D. INTEGRATION OF AIR DATA SYSTEMS

The Aerometric Information Reporting System (AIRS) is a new integrated data system being developed by EPA to replace entirely the existing data bases, files, and software now used by the EPA for storing and retrieving ambient air quality data, stationary source and emissions data, and source compliance data. The AIRS project was fully approved by senior EPA management in December 1980 after the earlier comprehensive feasibility study revealed the advantages of a truly integrated data system. Detailed performance specifications were completed in 1981-82 which defined the overall structure of AIRS. The AIRS will be composed of two relatively separate components (air quality and facility data) but will use common sets of geographical and other codes and draw upon a state of the art data base management system.

In 1984, work progressed on the air quality component of AIRS. This segment is expected to be fully available for use by the States by late 1986 with pilot installations at the State level in 1987.

E. EMISSION FACTOR DEVELOPMENT

In 1984, EPA published emission factors for use by States and others to estimate source emissions and compile emissions inventories. Emission factor information is published and distributed for criteria pollutants in a publication entitled "Compilation of Air Pollutant Emission Factors." Current emphasis is on developing size-specific emission factors with special emphasis on particles less than 10 microns.

EPA also distributed guidance in 1984 on procedures for estimating emissions for selected, potentially toxic pollutants. Final reports were distributed for acrylonitrile, carbon tetrachloride, chloroform, ethylene dichloride, formaldehyde, nickel, and chromium. Reports are now in preparation for manganese, phosgene, vinylidene chloride, epichlorohydrin, chlorobenzenes, PCB's, and ethylene oxides. Issuance of these additional documents is scheduled for 1985, pending the completion of peer review for each document.

F. NATIONAL DIOXIN STUDY

In 1984, EPA initiated the National Dioxin Study to assess the potential extent of contamination of the environment with chlorinated dioxin compounds. One portion of the study is assessing the potential air contamination from various combustion sources. A literature review has been completed and a program plan developed for undertaking this effort. A program to collect stack samples from about 10-12 combustion sources and ash samples from 40 to 50 such sources has been initiated. The project is scheduled for completion in December 1985.

III. AIR POLLUTION RESEARCH PROGRAMS

A. INTRODUCTION

The EPA's Office of Research and Development (ORD) supports EPA's mission of protecting human health and the environment by both responding to its short-term regulatory needs for scientific information and technical assistance and by anticipating future information needs and initiating research to satisfy those needs.

Air pollution research programs in 1984 were planned by ORD in conjunction with senior managers from the appropriate program offices, and two senior regional office representatives through the Air and Radiation and Multi-media Energy Research Committees. The committees provide a mechanism for ORD to communicate research information and resource changes to the program offices and Regions, as well as a mechanism for the program offices to communicate to ORD any proposed or contemplated regulatory changes that may affect the research program.

In an effort to develop more cohesive and responsive long-range research programs, the EPA Assistant Administrators for Research and Development and Air and Radiation identified priority research issues. These issues cut across scientific disciplines (e.g., monitoring, health, engineering, environmental processes), and the pollutant-specific structure of the research programs. The following discussion of EPA's major research accomplishments in 1984 are organized by these issues.

B. GENERAL AIR POLLUTION RESEARCH ACTIVITIES

The ORD air pollution research program provides EPA with the scientific data bases, methodologies, assessments, models, emission reduction technologies and corresponding quality assurance support to develop and implement air quality standards and to ensure compliance with them. The research program focuses on the six air pollutants for which national ambient air quality standards (NAAQS) have been established under Section 109 of the Act (ozone, carbon monoxide, particulate matter, sulfur dioxide, nitrogen dioxide and lead), and on potentially hazardous air pollutants which are defined as pollutants which may cause irreversible or reversible incapacitating illness and have not already been regulated under Section 109. Summarized below are the major air pollution research activities in these areas undertaken by EPA in 1984.

Risk Assessment Documents Needed to Support Regulatory Activities

The EPA completed the second external review draft of the criteria document for lead[1] and the first external review draft of the criteria document for ozone and other photochemical oxidants[2] in 1984. In addition, the addendum to the 1979 criteria document for carbon monoxide (CO) was also published.[3] Final health assessment documents were completed for carbon tetrachloride,[4] coke oven emissions,[5] chromium,[6] inorganic arsenic,[7] manganese,[8] mercury,[9], and methyl chloroform.[10] External review draft documents also were completed for six additional chemicals.[11,12,13,14,15,16]

Information on the Uncertainties Associated With Adverse Health Effects of Air Pollutants

Three articles were published on research responding to critical data gaps in the dose-reponse data base for sulfur dioxide (SO_2) and ozone (O_3). One article described the pulmonary responses of exercising asthmatics exposed to SO_2 in controlled laboratory conditions.[17] The other two articles discussed in-vitro and in-vivo animal tests which were conducted to measure changes in immune function, metabolism, and other biological parameters following acute exposures to SO_2 and O_3.[18]

The early phases of studies assessing the effects of low level CO on patients with angina were completed to support the review of the CO NAAQS. Reports have been written and prepared for publication.

Studies designed to determine whether diesel emissions are carcinogenic, and, if they are, how potent they are, were completed to support activities related to in regulating mobile source emissions. A report on the use of tier bioassays in evalutating unregulated motor vehicle emissions was completed.[19]

Several in-vivo and in-vitro studies identifying the metabolites and routes of metabolism and activation of 1-nitropyrene were completed. This chemical, which has been identified as as a mutagen and carcinogen, is a common combustion product. The results of these studies will be used for developing strategies to control combustion product emissions.

Neurotoxicity studies of toluene were completed.[20,21] Based upon the results of these studies and other data already gathered on toluene, EPA decided not to list toluene as a hazardous air pollutant. An article on the reproductive effects of exposure to manganese on the male rat was prepared to support listing decisions.[22]

Models Needed to Extrapolate From Animal to Human Risks, From High to Low Doses, and From Acute to Chronic Effects

In 1984, EPA initiated a multi-phase program to develop quantitative models to extrapolate from acute human studies and acute and chronic animal studies to long-term human health effects of air pollutants. A report describing the sensitivity of several animal species, including humans, to O_3 inhalation was produced.[23]

Research on the Contribution of Air Pollution to the Incidence of Cancer in the United States

Plans for a long-term, interdisciplinary integrated air cancer project were developed by EPA during 1984. The purpose of the project is to provide an improved capability for performing cancer risk assessments on airborne pollutants. The goals of the program are to identify the principal airborne carcinogens, determine which emission sources are major contributors of carcinogens to the ambient air, and improve the estimate of comparative human cancer risk from specific air pollution emission sources.

Information on the Welfare Effects of Pollutants

Based upon data gathered through the National Crop Loss Assessment Network (NCLAN), an economic assessment on the effects of O_3 on agriculture was produced.[24] Reports of the economic methodology used to assess O_3 damage were also produced in 1984.[25]

A comprehensive multi-year research plan was developed in 1984 to assess the problem of visibility degradation. In addition to developing this plan, a number of studies on the optical properties of ambient air aerosols and plume visibility were completed.

Information on the Atmospheric Chemistry and Physics of Air Pollutants

To improve urban scale ambient air quality models, a protocol for developing a reactivity classification system for volatile organic compounds (VOC's) was in preparation in 1984. When complete, this protocol will enable EPA to determine the extent that specific VOC's contribute to the formation of O_3. This information is needed to determine whether certain VOC emissions need to be controlled to achieve O_3 standards.

Field and laboratory studies were conducted to determine the lifetimes, spatial and temporal distributions, and transformation products of selected hazardous air pollutants. The roles of wet and dry deposition in removing such pollutants from the atmosphere were determined.

An improved second generation regional O_3 model was completed. This model will be used to predict the air quality impact of long-range O_3 transport to urban areas located downwind. Analysis of the results of the Cross Appalachian Tracer Experiment was completed. This was a multiagency effort to quantify long-range gas and particulate transport processes.

An assessment document was prepared on the status of complex terrain dispersion models. These models enable EPA to better predict the impact of sources on ambient air quality in areas with complex terrain. Also, fluid modeling studies were completed for a variety of complex terrain effects.

Several user's guides were developed to assist Regional, State, and local air pollution officials in applying specific air quality models. In 1984, user's guides were completed for the Pollution Episodic Model,[26] a Single Source Gaussian Puff Dispersion Model (INPUFF),[27] and a Photochemical Box Model[28] and Mesopuff-II.[29]

Mobile Source Emission Characterizations Needed to Evaluate the Effectiveness of Control Strategies

Research characterizing gaseous and particulate mobile source emissions from heavy-duty diesel and gasoline-powered trucks and buses was completed. The data will be used by EPA to assess the impacts of mobile source emissions on ambient air quality. Real-time measurement procedures were refined to more accurately analyze methanol and formaldehyde emissions from vehicles fueled by pure methanol and methanol-gasoline blends.

Monitoring Systems and Methods Needed to Support Regulatory Activities

Research to develop methods for monitoring various pollutants focused on PM_{10} in accordance with the proposed change in the particulate matter air quality standard from total suspended particulates to PM_{10}. Standard operating procedures for sampling ambient particulate matter were developed, and a detailed PM_{10} inlet comparison study was conducted.

A study of methods available for source sampling of hazardous air pollutants was conducted to determine where losses and transformations occur. Stationary source emission test methods were developed and validated. Source emission continuous monitors were evaluated under field conditions and the data compared to compliance methods. Data on the ultraviolet and infrared spectra, the distribution of organics between the gaseous and solid phases, and the speciation of compounds was produced to develop methods for measuring hazardous air pollutants in the ambient air.

Human exposure data collected during the winter of 1982-83 as part of the Denver and Washington, D.C., CO studies was analyzed. Statistical analyses of the exposure and activity patterns in these cities were conducted and papers prepared summarizing these data.[30,31,32] As part of the indoor air research program, an air quality research strategy was developed.

Quality Assurance Support

To ensure that EPA decisions are backed by technical data that are of known accuracy and precision, ORD provided quality assurance (QA) support in accordance with EPA policy and QA requirements contained in EPA regulations. Quality assurance support for the State and Local Ambient Air Monitoring Stations (SLAMS) and National Source and Ambient Monitoring Programs (NAMS) was provided. The repository for reference samples was maintained, and standard reference materials were prepared and distributed. Two standard ultraviolet spectrophotometers were obtained from the National Bureau of Standards and deployed to the EPA Regions to measure O_3 levels. Monitoring activities associated with the National Atmospheric Background Network, which was designed to provide data on O_3 concentrations in remote areas of the country, were completed and the sites restored.

Stationary Source Emission Characterizations and Technology Evaluations

Research to control particles focused on improving the performance, reliability and cost-effectiveness of electrostatic precipitators (ESP's) and fabric filters in collecting small particles. The technical limits of applying large diameter electrodes in new or existing ESP's were determined. These studies indicated that particulate emissions can be reduced by as much as a factor of four in some retrofit applications.[33] The ESP's which combine the features of large diameter electrodes and two stage ESP's into one multi-stage unit appear to be especially economical for power plants using low sulfur coal. A two dimensional computer model was developed to assess the electrical nature of ESP designs. The ESP vendors hope to utilize this model to improve their designs while the EPA will use the model as a diagnostic aid for compliance and permitting activities. Preliminary research on a multi-stage ESP designed to control both SO_2 and particulates produced results of 40-90 percent SO_2 removal while still meeting applicable particulate standards.[34]

The performance of fabric filtration continues to be improved with the application of electrostatically enhanced fabric filtration (ESFF). In 1984, a test of commercial-sized fabric filter bags was conducted at a pilot baghouse. This test demonstrated that ESFF is operable at one-half the energy loss of the conventional bags in service.[35] Additional research indicates that one-fourth the energy loss expected in a spray dryer/baghouse combination can be achieved with ESFF.[36] The application of this technology could reduce capital costs by 50 percent and result in lower maintenance costs for baghouse filters which are extensively used for cleaning gases.

Wind tunnel experiments were conducted in 1984 and were used to develop a mathematical model to determine the optimal windbreak porosity, size and location of fugitive emissions. This model will be used to control fugitive emissions from storage piles.

In conjunction with The Electric Power Research Institute (EPRI), the Fifth Symposium for the Transfer and Utilization of Particulate Control Technology was conducted to extend particulate control technology to designers, users, and educators.

Research to control SO_2 emissions resulted in a full-scale field evaluation of a lime spray dryer method. Short-term test results showed that the new source performance standards (NSPS) for SO_2 and particulate matter can be met at costs lower than when conventional wet scrubbing systems are used.[37] A full-scale evaluation of a flue gas desulfurization (FGD) method was conducted using a dibasic acid to enhance the performance of limestone scrubbing FGD systems. The results of this test indicated that compliance SO_2 removal could be obtained consistently with reduced operational maintenance problems at an estimated annual cost savings of $600,000 per year.[38]

The Ninth FGD Technology Symposium was conducted in conjunction with the EPRI to provide the utility industry, vendors and regulatory officials with up-to-date guidance on technologies for SO_2 control and acid deposition mitigation options.

Research to control NO_x emissions focused on low NO_x burners, in-furnace NO_x reduction, air staging/recirculation and catalytic reduction. In 1984, a low NO_x burner was successfully evaluated on an oil field steamer with 75 percent reduction of NO_x emissions.[39] Also, two demonstrations utilizing second generation (recirculation) low NO_x burners were successfully completed. One demonstration was on a 400-megawatt (MW) tangentially-fired utility boiler, and the other was on a 200-MW wall-fired, industrial size utility boiler. In both cases NO_x emissions of 0.4 $lb/10^6$ Btu were achieved.[40]

Pilot- and commercial-scale destruction efficiency tests of VOC's were conducted using industrial flares. The results of the VOC flare tests were used by EPA to revise a number of industry-specific NSPS. The results were also instrumental in achieving a settlement with the Chemical Manufacturers Association in their petition on industrial flare performance.

Research to control hazardous air pollutants focused on identifying the major sources and evaluating applicable control technologies. In 1984, source assessments for copper and butadiene emissions were made. Also, a comprehensive literature review of control technologies for hazardous air pollutants was conducted, and a method for ranking industrial sources of hazardous air pollutants by process parameters was developed for the Office of Air and Radiation.

C. ACID DEPOSITION RESEARCH ACTIVITIES

Research on acid deposition is coordinated through the National Acid Precipitation Assessment Program (NAPAP), which is administered by the Interagency Task Force on Acid Precipitation. The EPA is one of three joint chairs of the Interagency Task Force, and has the lead role in the aquatic effects, control technology and assessment research areas. The term "acid rain" means the atmospheric deposition of acidic or acid-forming compounds in either dry or wet form. These compounds exist in the atmosphere as gases or aerosol particles containing SO_x, NO_x, hydrogen chloride, sulfuric acid, nitric acid and certain sulfate and nitrate compounds. While scientists generally agree that these compounds are responsible for deposition of varying degrees of acidity, many questions still remain about the causes, effects, and methods of mitigating or controlling acid deposition. The objective of the acid deposition research program is to develop the necessary data to fully understand the sources and characteristics of acid deposition, as well as the extent of damage or potential damage. As part of its effort to provide current acid deposition research information to EPA policymakers and the general public, EPA published in 1984 "The Acidic Deposition Phenomenon and Its Effects--Critical Assessment Review Papers."[41]

Little data exist on dry deposition due to the difficulty in developing and deploying accurate monitoring instrumentation. Monitoring is made difficult by the fact that dry deposition rates vary with surface cover and topography, as well as with environmental variables such as wind speed and humidity. In 1984, field tests of the prototype dry deposition monitor were initiated by EPA.

Research Into the Effects of Acid Deposition on Aquatic Resources

As part of the first phase of the National Surface Water Survey (NSWS), research was conducted to quantify the chemistry of lakes and streams in areas now believed to contain the majority of low-alkalinity waters. In 1984, the Eastern Lakes field survey was completed. This will enable EPA to determine what percentage of lakes and streams in the susceptible regions are acidic or have low alkalinity. Following this determination, regionally representative surface waters will be selected to quantify future changes in aquatic resources through a long-term monitoring program.

One of the most important questions in the aquatic effects research program is the extent of direct response and delayed response systems in the United States. If direct response systems prevail in sensitive areas of the country, then no additional changes in surface water chemistry are expected given that there are no changes in present acidic loading rates. However, if delayed response systems predominate, then more waters may become acidic due to acidic deposition even if current loading rates do not change. In 1984, a research plan to investigate the direct/delayed response phenomenon was developed. The results from this research will influence decisions concerning the immediacy of possible controls on sulfur emissions.

Acid Deposition Effects on Watersheds, Soils, and Forests

Many processes within watersheds affect the rate and extent of acidification of surface waters. Watershed bedrock geology, system hydrology and biological processes are all important determinants of the response of surface waters to acidic inputs from the atmosphere. In 1984, research in this area focused on assessing the geochemical and physical characteristics of soils.

D. ENERGY-RELATED RESEARCH ACTIVITIES

In 1984, research continued to focus on the development of the limestone injection into the multistage burner (LIMB) emission reduction technology that is designed to simultaneously reduce both SO_x and NO_x. During 1984, ORD developed high surface area sorbents and sorbents treated with "promotors" such as sodium carbonate to improve the sulfur capture ability of the LIMB technology, Beyond the possible acid rain retrofit applications, these developments may make the LIMB technology suitable for use as a low cost control alternative for meeting new source performance standards for boilers operating with low-sulfur coal. Laboratory tests to define the optimum conditions for the injection of the sorbent were initiated. In 1984, a contract was awarded to the Babcock and Wilcox Company to conduct a full-scale demonstration of LIMB on a wall-fired utility boiler. This demonstration will be co-funded with the Electric Power Research Institute.

IV. DEVELOPMENT OF NATIONAL AMBIENT AIR QUALITY STANDARDS

The 1977 Clean Air Act Amendments require EPA to review regularly and revise, if necessary, all of the national ambient air quality standards (NAAQS). Reviews of all existing NAAQS were in progress during 1984.

During 1984, work continued on finalizing EPA's proposal of August 19, 1980, to revise the NAAQS for carbon monoxide (CO).[1] As a result of questions raised concerning the adequacy of several of the key studies used in developing the 1980 proposal, the EPA issued an addendum[2] to the CO criteria document and a staff paper[3] reassessing how the scientific data reviewed in the addendum might be used in selecting final CO standards. Final action on the CO standards is scheduled in 1985.

On February 23, 1984, EPA proposed to retain the existing primary and secondary NAAQS for nitrogen dioxide (NO_2) of 100 micrograms per cubic meter (ug/m^3), annual average. The EPA also proposed not to set a short-term NO_2 standard, since data were not adequate to establish such a standard and the current annual standard protects against peaks of concern. Final action on this proposal is expected in early 1985.

On March 20, 1984, EPA proposed changes to the NAAQS for particulate matter (PM)[5] that would make major changes to the national control program for airborne particles. For the primary standard, EPA proposed to replace the current total suspended particulate matter (TSP) standard with a standard that includes only those particles less than 10 micrometers (PM_{10}). The proposal indicated that the EPA intended to select final primary standards from ranges of 50-65 ug/m3, annual arithmetic mean, and 150-250 ug/m^3, maximum 24-hour concentration. The EPA proposed to retain a secondary TSP standard from the range of 70-90 ug/m^3, annual average and to revoke the current 24-hour secondary standard. All standards would be expressed in statistical terms (expected exceedances). As a result of a number of requests from the public and delays in publishing guidance for development of implementation plans, the comment period on the proposed standards was held open through the end of 1984. Consequently, final promulgation is not expected until 1986.

Concurrence by the Clean Air Scientific Advisory Committee (CASAC) on the scientific accuracy and completeness of the staff paper[6] for sulfur oxides (SO_x) was received in 1983. Work on the exposure analysis and the cost, economic and benefits analyses were nearly completed by the end of 1984. A proposal to revise or reaffirm the standards is scheduled in 1985.

Work on the revisions to the criteria documents for ozone and lead continued in 1984 with the release of the first external review draft for ozone and the second external review draft for lead. The CASAC review of these documents and the staff papers for ozone and lead are scheduled in 1985. Work also continued in 1984 on the development of the regulatory impact analyses and the development and application of risk assessment methodologies for these standard reviews.

V. REGULATORY ASSESSMENT OF TOXIC AIR POLLUTANTS

The status of the toxic air pollutant evaluation and control program as of the end of 1984 is reflected in Table V-1. In 1984, decisions were published not to regulate toluene[1] and polycyclic organic matter (POM)[2] under the Clean Air Act. For toluene, this decision was based on a judgment that currently available information did not indicate a threat to public health at concentrations found in the ambient air. For POM, there was considerable uncertainty as to the magnitude of the cancer risk to the public, as well as difficulties in devising an appropriate regulatory program for several important POM source categories such as wood stoves, forest fires, and agricultural burning. Also in 1984, coke oven emissions were listed as a hazardous air pollutant under Section 112 of the Clean Air Act.[3] Assessments containing information on the emission sources, public exposure, health effects, current controls, and possible control improvements were completed for most of the substances shown in the "Regulatory Options Analysis" column of Table V-1. Decisions on whether to regulate these compounds are expected to be published in 1985.

As part of the EPA's effort to develop a more comprehensive and effective air toxics control program, a draft report on the nature and scope of the national air toxics problem was completed and issued for public comment.[4] The study indicates that while maximum individual risks tend to be associated with major point sources, the great majority of the predicted cancer incidence associated with air pollution is not mitigated by point source controls. The study suggests that area-wide risk can be high in urban areas as a result of exposure to multiple pollutants emitted from many diverse sources. Small area sources may contribute as much as 75 percent of predicted cancer incidences. This study and follow-on analyses will be used to shape future policy directions in the air toxics area, including discussions on possible Clean Air Act amendments.

As part of the program for regulating benzene (listed as a hazardous air pollutant under Section 112), EPA has been assessing the need to regulate sources in the gasoline marketing chain. This assessment was further spurred by data indicating that unleaded gasoline causes cancer in laboratory animals and should be considered a probable human carcinogen. An analysis of regulatory strategies for the gasoline marketing industry was published for public comment in August 1984.[5] The options considered were: (1) no additional control, (2) control of vehicle refueling (Stage II) in ozone non-attainment areas, (3) control of gasoline marketing emissions nationwide via (a) Stage II controls, (b) onboard vehicle controls, and (c) controls on bulk terminals and plants (Stage I). A decision on the appropriate regulatory option is expected in 1985.

Also in 1984, substantial activities were undertaken to establish a National Air Toxics Information Clearinghouse in an effort to improve communication between EPA and State and local agencies, and among State and local agencies. The Clearinghouse is funded by EPA and is a cooperative effort between EPA and the State and Territorial Air Pollution Program Administrators and Association of Local Air Pollution Control Officials. The goal of the Clearinghouse is to disseminate knowledge about activities underway to solve toxic air pollutant problems and to reduce duplication of effort. Some of the kinds of information included in the Clearinghouse are: (1) regulatory program activities, including acceptable ambient limits; (2) source information, such as pollutants emitted and required control technology; and (3) source test and ambient monitoring methods in use. Automation of the data base and publication of the first report compiling all the information contained in the Clearinghouse are scheduled for completion in the late spring of 1985. Because State and local agencies indicated an immediate need for information exchange to begin, EPA began publishing the Air Toxics Information Clearinghouse Newsletter in December 1983, and published five issues in 1984. Other publications in 1984 were a bibliography of EPA reports relevant to toxic air pollutants,[6] a bibliography of health and risk assessment information,[7] a listing of EPA's ongoing research and regulatory development projects[8] and an interim report summarizing data submitted by State and local agencies.[9]

Toxic Air Pollutant Evaluation and Control Program[1]

Preliminary Health Screening	Detailed Assessment[2]	SAB Review[4]	Regulatory Options Analysis[5]	Regulatory Decisions[6]	NESHAPS Proposed	NESHAPS Promulga
Copper	Dibenzofurans	Chloroform	Acrylonitrile	Toluene (N)	Benzene	Mercury
Phenol	Phosgene	Dioxins	Methyl chloroform	Beryllium (L)	Arsenic	Beryllium
Propylene		Nickel	Freon 113	Asbestos (L)	Radionuclides	Asbestos
Propylene oxide		Beryllium[3]	Carbon tetrachloride	Vinyl chloride (L)		Vinyl chloride
Acetaldehyde		1,3 Butadiene	Methylene chloride	Coke oven emissions (L)		Benzene
Acrolein			Manganese	Benzene (L)		Radionuclide
Hydrogen sulfide			Hexachloropentadiene	Arsenic (L)		
Chlorine & HCl			Gasoline vapors	Radionuclides (L)		
Ammonia			Chlorobenzenes	POM (N)		
Zinc & zinc oxide			Epichlorohydrin	Mercury (L)		
Styrene			Asbestos[3]			
Naphthalene			Vinylidene chloride			
Toluene di-isocyanate			Ethylene dichloride			
			Chromium			
			Perchloroethylene			
			Trichloroethylene			
			Cadmium			
			Ethylene oxide			
			Chloroprene			

[1] As of 2/27/85.
[2] Health and exposure assessment. Not yet submitted to SAB.
[3] Reassessment of original health effects information.
[4] Submitted to SAB. Recommendations not yet received.
[5] Recommendations received from SAB or no SAB review planned. Analysis underway to determine need for regulation.
[6] L = listed under §112; N = decision not to regulate.

VI. STATUS OF AIR QUALITY MANAGEMENT PROGRAMS

A. DEVELOPMENT OF POLICY AND REGULATIONS

Implementation Policy and Guidance for Revised Particulate Matter Standards

As discussed in Chapter IV of this report, EPA proposed revised national ambient air quality standards (NAAQS) for particulate matter on March 20, 1984. The proposed standards consist of two primary standards (an annual and a 24-hour standard) that would apply to a size range of particles nominally 10 micrometers and smaller in diameter (PM_{10}), and an annual total suspended particulate (TSP) secondary standard. The focus of the proposed primary standards on a new particle size range has necessitated preparation of regulations, policy, and technical guidance so that State implementation plans (SIP's) for PM_{10} can be developed by the States.

In 1984, EPA prepared a Federal Register notice which solicited public comment on (1) regulatory amendments which would accommodate the focus of the primary standards on the PM_{10} size range and which would establish the requirements for new source review programs, (2) a policy for SIP development for primary and secondary standards and the EPA's interpretation of the Clean Air Act which results in that policy, and (3) technical guidance specific to dealing with the PM_{10} size range. The proposed regulatory amendments would focus the health-protecting air pollution episode programs on PM_{10} rather than TSP and would lay out the requirements for a dual new source review system, e.g., new sources would be reviewed for both PM_{10} and TSP emissions. The SIP development policy would establish time frames for SIP development and standards attainment for the primary and secondary standards. The PM_{10} technical guidance addresses development of emission inventories, dispersion and receptor modeling, ambient monitoring and data reporting, using ambient TSP data where PM_{10} data are not available, and monitoring for prevention of significant deterioration purposes.

The package has undergone review within the EPA and by representatives of State and local air pollution control agencies. Federal Register publication was scheduled for early in 1985.

Visibility Protection

Section 169A of the Clean Air Act establishes as a national goal "the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from manmade air pollution." On December 2, 1980, EPA promulgated regulations implementing this section.[1] All States which contained mandatory Class I Federal areas were to develop and submit SIP revisions to EPA which implemented these regulations.

On December 20, 1982, a number of petitioners filed suit in the United States District Court for the Northern District of California seeking to compel EPA to promulgate State plans for visibility protection under Section 110(c) of the Clean Air Act for those States which had not submitted such plans. During 1983, EPA and the Environmental Defense Fund negotiated and signed a settlement agreement which was accepted by the court on April 20, 1984. The settlement agreement calls for a two-part implementation of the 1980 rules. New source review requirements and a visibility monitoring strategy were proposed for the deficient States on October 23, 1984.[2] These provisions will be promulgated in 1985 to meet the first part of the settlement agreement.

In compliance with the second part of the agreement, the SIP's for the States will be reviewed in 1985 to determine their adequacy for meeting the remainder of the rules. Federal plans to implement the deficient portions are scheduled to be proposed in 1986 and promulgated in 1987.

A Visibility Task Force was formed in 1983 to develop recommendations on a long-range strategy for dealing with visibility impairment from pollution-derived regional haze. The group is charged with defining goals, research needs, and regulatory options and serves to integrate regional haze issues in mandatory Class I Federal areas with more general visibility protection considerations under the NAAQS and with related aspects of other air pollution control programs that affect visibility. The task force will involve several EPA offices, other Federal agencies, concerned States, environmental organizations, and industry. In December 1984, the task force held two public meetings in order to obtain comments from the private sector on regional haze issues. The major task force output will be a report, currently scheduled for early 1985, containing its findings and recommendations and a summary of supporting material and analyses. The group will also issue interim research and analytical recommendations.

Tall Stacks and Other Dispersion Techniques

On February 8, 1982, EPA promulgated regulations required by Section 123 of the Clean Air Act.[3] These regulations, known as the "stack height" regulations, limit the extent to which stationary sources may rely on stacks in excess of "good engineering practice" (GEP) or on other dispersion techniques in lieu of more stringent emission controls. The regulations were challenged by the Sierra Club Legal Defense Fund, Inc.; the Natural Resources Defense Council, Inc.; and the Commonwealth of Pennsylvania in Sierra Club v. EPA, 719 F.2d 436 (D.C. Cir. 1983). As a result of this challenge, the U.S. Court of Appeals for the District of Columbia Circuit ordered EPA to reconsider part of its regulations. The court provided EPA with detailed instructions to follow in subsequently revising its regulations.

A petition for writ of certiorari filed by a group of affected industries was rejected by the U.S. Supreme Court on July 2, 1984, and on July 18, the Appeals Court issued its mandate requiring EPA to revise the stack height regulations not later than January 18, 1985. Proposed revisions to the regulations were published in the Federal Register on November 9, 1984.[4] A 30-day period for public comment was provided initially but, in response to numerous requests, EPA obtained an extension of the court-ordered promulgation deadline, enabling it to extend the public comment period and to hold a public hearing on the proposed regulation in Washington, D.C., on January 8, 1985.

Restructuring SIP Preparation Regulations

On October 11, 1983, EPA published in the Federal Register proposed changes to the SIP preparation regulations of 40 CFR 51.[5] The proposal would delete obsolete provisions and rewrite the regulations in a new, shorter, and better-organized format. States using the revised regulations to prepare SIP's would find them current and easier to follow than the present regulations. The new format also has a flexible structure into which future requirements can be more easily incorporated. The EPA received many comments during 1984 on the proposal indicating widespread interest in the project. Final promulgation of this rulemaking is now scheduled for 1985.

Federal Enforcement of Visible Emissions

The EPA intends to propose and promulgate a new, modified visible emission test method for evaluating compliance with certain types of SIP opacity standards where the State has not specified a test method in the SIP. The existing method for Federal enforcement of SIP opacity limits in such cases is Test Method Number 9 of 40 CFR 60. This proposal, which EPA started to develop during 1984 and will complete during 1985, will provide EPA with an expanded array of specific visible emissions testing procedures for various types of SIP opacity emission limitations. This will allow EPA to better enforce SIP provisions since the new regulations will provide the necessary flexibility in responding to the many and varied SIP regulations. The new procedures will appear in a new Appendix F in Part 52 of the Code of Federal Regulations.

Guidance to Promote Consistency in the Application of National Policies

During 1984, EPA continued to provide information to assist State and local agencies in the development of SIP's and other air programs by distributing updates of the "Air Programs Policy and Guidance Notebook" and the "Air Programs Reports and Guidelines Index." The notebook includes a collection of current memoranda and documents concerning national policy and guidance. The index represents a compilation of bibliographic information on current technical and guideline documents prepared by EPA over the past several years. The udpates were distributed to about 350 State and local agencies in addition to Regional and Headquarters personnel, all of whom are holders of the notebook and index.

B. PREVENTION OF SIGNIFICANT DETERIORATION AND NONATTAINMENT NEW SOURCE REVIEW ACTIVITIES

The EPA made significant progress in 1984 in carrying out its responsibilities under the Clean Air Act regarding the preconstruction review of new and modified stationary sources. Major 1984 activities are described below.

PSD Program Transfer

The EPA continues to emphasize the importance of quality transfers of the prevention of significant deterioration (PSD) and new source review (NSR) programs. In addition to the strong legal and resource reasons for implementation by State and local authorities rather than EPA, the EPA believes that the critical growth decisions associated with the preconstruction review process should be made at the State and local level. The permitting process, once transferred, forms the key for minimizing source-specific SIP revisions in the future. In 1984, EPA continued its progress in transferring implementation of the PSD program to State and local agencies. The majority of PSD permits are now issued by these agencies. Although several transfers are presently being held up by litigation and resulting policy clarification, significant progress was made nevertheless. As of the end of 1984, 40 State and local agencies had either full delegation of the PSD program or a PSD SIP, and 8 more had partial responsibility for the PSD program.

Modifications to Permits

In response to several requests, EPA is researching the possibilities for developing a national policy for reviewing proposed PSD permit modifications and extensions. Such a policy appears to be increasingly important as many of the source owners with valid PSD permits wish to change conditions within their permits on the eve of their construction or operation. A permit modification policy would provide a new opportunity for applicants, owners, and operators who propose changes to obtain revisions of existing permits or applications rather than having to apply for totally new permits. Currently, EPA believes that it is possible to develop a policy which does not allow circumvention of the present process and yet provides an easier means of making changes.

Chemical Manufacturers Association v. EPA

As previously reported, the EPA's PSD and nonattainment new source review regulations have been challenged by a variety of entities. These challenges were consolidated as Chemical Manufacturers Association v. EPA (CMA), D.C. Cir. No. 79-1112. On February 22, 1982, EPA entered into a litigation settlement with the industry petitioners in which it agreed to propose certain regulatory changes. An important part of the settlement agreement was satisfied by EPA's Federal Register proposal of August 25, 1983.[6] That proposal addressed the topics of fugitive emissions in new source review applicability determinations, Federal enforceability of various emissions reductions, "buffer zones" around Class I areas, review of secondary emissions, and offset credit for past source shutdowns.

An important matter of controversy has been the definition of "source" for the purposes of nonattainment new source review. The Clean Air Act is not clear in this area. In 1980, EPA promulgated a dual source definition that minimized the opportunity for modifications to sources to avoid review in nonattainment areas. This was challenged by industry in the CMA suit, but was not of primary concern in the settlement because EPA had replaced it with a "plantwide" definition in its rulemaking of October 14, 1981. The Natural Resources Defense Council claimed that the plantwide definition is inconsistent with the Act and, on August 17, 1982, the D.C. Circuit Court of Appeals ruled in their favor. Both EPA and industry representatives appealed this ruling, and on June 25, 1984, the Supreme Court decided in favor of EPA and the industry litigants. The EPA is presently developing a policy which will aid the Regions in processing proposed SIP's converting to a plantwide definition. Resolution of the definition of source should significantly accelerate the transfer of the nonattainment program to State and local agencies.

In its August 7, 1980, promulgation, EPA listed 30 source categories for which fugitive emissions would be included in PSD applicability determinations. Surface mining operations were not among these. The Sierra Club sued EPA on this point and on August 26, 1983, the D.C. Circuit Court of Appeals remanded this matter to the EPA for explanation of its position. On October 26, 1984, EPA published final action on this issue, reaffirming its current requirements for the inclusion of fugitive emissions in calculating whether a source is "major" for purposes of NSR. EPA further proposed to extend the requirements for inclusion of fugitive emissions to surface coal mining operations. This proposal remained open for public comment at the end of 1984. According to the rulemaking criteria established by EPA, the proposed listing of surface coal mines is only a presumption which can be overcome if the rulemaking record reveals that the costs associated with listing are unreasonable relative to the corresponding benefits.

The remaining issues in the August 25, 1983, proposal are addressed in a draft Federal Register notice which will be published in 1985.

C. IMPLEMENTATION OVERVIEW AND ASSISTANCE

National Air Audit System

The National Air Audit System (NAAS) was developed in 1983 as a joint effort by EPA, the State and Territorial Air Pollution Program Administrators (STAPPA), and the Association of Local Air Pollution Control Officials (ALAPCO). The need for the NAAS resulted from the fact that State and local air pollution control agencies have assumed responsibility for an increasing number of programs under the Clean Air Act over the years. The primary goals of the NAAS are to identify any obstacles that are preventing State and local air pollution control agencies from implementating effective air quality management programs and to provide EPA with quantitative information for use in defining more effective and meaningful national programs. The NAAS was implemented initially in 1984 and a total of 68 State and local air pollution control agencies were audited by teams composed primarily of EPA Regional Office personnel. The four program areas selected for the 1984 audit were Air Quality and SIP Activity, New Source Review, Compliance Assurance, and Air Monitoring.

The 1984 air audit program focused attention upon various aspects of the national air quality management program that need improvement. In some cases, it showed the need for improved guidance from EPA and, in other cases, it indicated areas where State and local control agencies need to remedy deficiencies. A report detailing the results of the 1984 air audit program was published by EPA in December 1984.[7]

Adjustments to the audit program in 1985 will be made in order to make it even more useful. These adjustments include redesigning the audit questionnaires to make the questions clearer and more uniform, streamlining the questionnaires by removing unnecessary material, and by developing more specific guidelines for the FY 1985 audit program.

In order to assure that solutions were developed for the problems that were identified in the 1984 audit, EPA planned a symposium to be held early in 1985 that would develop specific recommendations for future improvements to the air program. This symposium would be attended by selected EPA, State, and local air pollution control officials who would be given the responsibility to critically examine the audit results and then develop workable and realistic recommendations for improvement.

Post 1982 Attainment of Air Quality Standards

1. Extension Areas

Part D of the Clean Air Act requires that primary NAAQS for particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide, and ozone be attained no later than December 31, 1982. State implementation plan revisions providing for attainment of these standards were to have been submitted to EPA by January 1, 1979. Extensions of the attainment date to 1987 were authorized under prescribed conditions for the carbon monoxide and ozone air quality standards. One condition was the submission to EPA of an additional SIP revision by July 1, 1982, which demonstrated attainment of these standards not later than December 31, 1987. Forty-seven areas in 31 States that could not demonstrate timely attainment of the NAAQS for ozone or carbon monoxide were allowed an extension on the attainment date until December 31, 1987.

By September 30, 1984, the date by which all extension areas SIP's were to be finally approved or disapproved in the Federal Register, EPA had published final approval in whole or in part for 35 plans. None of the plans were finally disapproved. As of December 31, 1984, final action on 1 of the 12 remaining submittals had been published and final action on another was pending. Final action on the other 10 plans is expected in 1985.

2. Nonextension Areas

The Clean Air Act gives EPA the authority to require States to revise their SIP's if they are found to be substantially inadequate to achieve the NAAQS. In February 1984, EPA issued calls for SIP revisions for 27 areas in 15 States that had not received an attainment date extension. Calls for revisions to SIP's for particulate matter were deferred because of the pending proposed revision to the particulate matter air quality standard.

During the summer of 1984, air quality data through 1983 (and into 1984, if available) were reviewed to determine if additional areas needed to revise their SIP's. Based on this analysis, EPA determined that the SIP's for nine additional areas were substantially inadequate to provide for attainment and maintenance of certain primary (health-related) NAAQS, and notified those States by letter of this determination. Additional SIP calls were made separately for four more areas in 1984. Two States notified EPA by letters from their Governors that they will make SIP revisions. All areas receiving calls for SIP revisions had 1 year to submit a SIP revision to EPA.

Status of Nonattainment Areas

The following table lists those areas of the country that were not in attainment with air quality standards as of the end of 1984. Note that totals are not shown since the same area may be nonattainment for more than one pollutant.

Pollutant	Number of Nonattainment Areas*
Particulate matter (primary standard)	161
Particulate matter (secondary standard)	156
Sulfur oxides (primary standard)	56
Sulfur oxides (secondary standard)	13
Nitrogen oxides	4
Carbon monoxide	142**
Ozone	390***

*Areas listed in this table are either counties or portions of counties. The extension and nonextension areas discussed in the previous section are urbanized areas.
**96 areas received an extension until December 31, 1987.
***152 areas received an extension until December 31, 1987.

Lead SIP's

In October 1978, EPA published an NAAQS for airborne lead under Section 109 of the Clean Air Act.[8] Section 110 of the Act required each State to adopt and submit to EPA within 9 months (i.e., by July 1979) a plan to implement that standard. The Act further required EPA to approve or disapprove these SIP's within 4 additional months (by November 1979) and to promulgate SIP's within 2 additional months beyond that (by January 1980) for States that did not meet the requirements specified in the Act.

In 1982, the Natural Resources Defense Council (NRDC) and other parties filed suit in the U.S. District Court for the District of Columbia to require EPA to promulgate lead SIP's for those States that had been submitted but on which EPA had not taken final rulemaking. The Lead Industries Association and St. Joe Minerals Corporation intervened in the suit on behalf of EPA.

The EPA and NRDC negotiated a Settlement Agreement which was entered by the court on July 26, 1983. The Agreement allowed States additional time to prepare and submit lead SIP's before EPA was required to prepare a Federal plan. The Settlement Agreement established different schedules for different categories of States. For States that had already submitted SIP's before EPA reached agreement with NRDC, the Settlement Agreement required EPA to publish final approval or proposed disapproval by November 1983; with the exception of one extension approved by the court, EPA achieved this objective. For States with either major sources of lead or recent violations of the lead standard but which had not yet submitted lead SIP's, the Agreement set a trigger date of August 1, 1983, for submission of SIP's. The Agreement required EPA to publish final rulemaking on these SIP's by August 1984. The EPA met this commitment except for six States, where additional work is needed; EPA is negotiating with NRDC for extensions for these areas. The EPA also had to publish final rulemaking by January 1, 1985, for those States and territories that did not have an existing lead air quality problem but which still needed a SIP to assure that future problems did not occur. The EPA met this commitment except for five territories. In addition, EPA has proposed Federal implementation plans for lead for two areas around primary lead smelters that have incomplete or disapproved plans--El Paso, Texas, and Kellogg, Idaho. The EPA must take final rulemaking on those proposals in 1985.

It appears that there are no known areas that will have continuing lead air quality problems due solely to mobile source lead emissions. All of the known air quality problems regarding lead appear to be caused by stationary sources, such as primary and secondary lead smelters and gasoline lead additive plants. For the 56 States and territories at the end of 1984, 45 have submitted complete SIP's on which EPA published final rulemaking; 9 have submitted draft or final SIP's that cover complete States, but on which EPA has not yet completed rulemaking; and 2 have not submitted final SIP's that cover complete States.

Emissions Trading

Emissions trading includes several alternatives to traditional regulation. These alternatives do not alter existing air quality requirements but simply gives States and industry more flexibility to meet these requirements. Bubble trades and emissions reduction banking are two of the major emissions trading concepts being promoted by EPA.

1. Bubble Trades

Bubble trades allow existing plants (or groups of plants) to treat all of their emission points as though they were under a giant bubble and reduce or eliminate pollution controls where costs are high, in exchange for compensating increased control at emission sources where control costs are low. They give firms increased compliance flexibility, meet current or future pollution control requirements more quickly, make innovative control approaches profitable, and can result in significant savings over the costs of conventional controls. In 1982, EPA issued a proposed emissions trading policy to replace the original bubble policy and to streamline procedures, giving States and industry more opportunities to use bubbles in many more circumstances and geographic areas. Since that time, EPA has reviewed numerous formal comments on the policy and developed alternatives to respond to specific issues raised by the commenters. In

1983, EPA proposed alternatives for shutdowns for public review and additional comment. EPA plans to issue the policy in final form after considering all of the comments that were submitted on the proposals. As of December 31, 1984, EPA approved 37 bubbles and proposed to approve another 11 bubbles resulting in an estimated savings of more than $200 million over the cost of conventional pollution controls, with many producing energy savings and greater emission reductions than traditional regulation.

Bubbles can be approved by the States without case-by-case EPA review if evaluated under EPA-approved State procedures known as generic trading rules that assure no bubble will interfere with timely attainment and maintenance of the NAAQS. State generic rules are approved by EPA only if their procedures are replicable in operation to meet this test. As of December 31, 1984, EPA approved generic trading rules for nine States or local areas which allow these States to approve bubbles without prior Federal approval. Twenty-five bubbles have been approved by States under generic trading rules. At least 130 bubbles are under development or review either as SIP revisions or under generic rules. In total, over 200 bubbles were approved, proposed, under review, or under development in 29 States throughout the nation through the end of 1984. The total estimated savings from these bubbles exceeds $700 million. Generic rules have been approved by EPA for nine States or local areas and proposed for one more. At least 11 additional States or local areas are developing such rules.

2. Emissions Reduction Banking

Emissions reduction banking allows firms to get credit for surplus emission reductions and to store such emission reduction credits (ERC's) in a legally-protected manner. ERC's can be "banked" (stored) and used in bubble applications to meet control requirements for existing plants more flexibly and efficiently, as offsets to support economic growth in areas not meeting air quality standards, or in "netting" to exempt certain expansions or modernizations from new source review. Banking rules can speed trades between firms, expand opportunities for bubbles, and encourage the production of cheap ERC's at optimal times. Banking systems also provide the certainty needed for firms to invest in ERC's when meeting other control requirements, creating a pool of readily available credits that make trading easier, and speeds permit issuance while assuring progress toward clean air.

As of December 31, 1984, formal banking rules have been approved for four States and local areas and four Statewide or local areas banking programs have been proposed. Nine additional areas have adopted at the State or local level banking programs, some of which are under EPA review. Banking rules are known to be under development or consideration in seven more areas.

Acid Deposition Implementation Issues

In 1984, EPA initiated an effort to explore with the States the potential issues that could arise in implementing any possible acid deposition control program. Accomplishing this effort was planned in three phases: identifying key implementation issues and major options for dealing with them; evaluating various options using both "in-the-field" and "in-house" approaches; and preparing preliminary or prototype guidance on the issues.

An EPA committee with Headquarters and Regional Office representatives produced an initial list and description of over 200 implementation issues. Early coordination on the development of these issues was established with State and local air regulatory agencies (through a STAPPA/ALAPCO task force) as well as with certain industrial and environmental groups.

Using the initial listing and description of issues as a basis, EPA and the STAPPA/ALAPCO task force determined those issues that might be most amenable to the "in-the-field" studies by State and local agencies. These studies would be eligible for funding through a $3 million Congressional appropriation for the development of "the technical and institutional foundations for future acid deposition control strategies."

In application for this funding, State and local agencies submitted 53 proposals to conduct a variety of projects (called State Acid Rain--STAR--projects) to analyze some of the implementation issues and options. An evaluation procedure was developed by EPA to score and rank the proposals and, based on the resulting ranking and with the concurrence of STAPPA/ALAPCO, 31 STAR projects were initially selected for funding. Work on the projects will begin in early 1985 and will be completed on a 12- to 18-month time frame.

Meanwhile, EPA began to identify other important issues and options that should be investigated with "in-the-field" or "in-house" studies but were not being examined in the STAR projects. EPA also began to determine what types of projects would be appropriate for examining these other issues and options.

VOC RACT Clearinghouse

The EPA has specified that the SIP revisions for areas designated as not attaining photochemical oxidant standards should contain, as a minimum, regulations for controlling volatile organic compound (VOC) emissions from stationary sources. These regulations must provide for the implementation of reasonably available control technology (RACT). To assist the States in defining RACT, EPA prepared a series of documents, referred to as control techniques guidelines (CTG's), which address various control options for a variety of individual stationary sources. Since EPA cannot publish CTG's for all affected VOC source categories, States may have to develop regulations using information sources other than CTG's. The purpose of the VOC RACT clearinghouse is to provide a means by which State and local air pollution control agencies can exchange technical information, minimize duplication of effort and resources, and provide guidance regarding VOC controls for various sources. The VOC RACT clearinghouse is a cooperative effort with STAPPA, ALAPCO, and EPA.

The VOC RACT clearinghouse output takes several forms, including a VOC RACT clearinghouse newsletter, which is targeted for publication on a quarterly basis. During 1984, four newsletters were issued. Other outputs during 1984 were a directory of air pollution control agency VOC contact persons, a summary of State and local agency VOC regulatory developments, and a bibliography of pertinent VOC technical reports.

D. AIR POLLUTION TRAINING

In 1984, EPA continued to provide technical training in the abatement and control of air pollution. This training included short course presentations (3 to five days in length), self-study courses, technical assistance to others who conduct training, and the support of the traineeships and fellowships for graduate air pollution training.

During 1984, EPA conducted 29 short courses in 16 different subject areas for a total of 658 students. These courses were presented in locations across the United States by seven universities designated as area training centers. Technical assistance was provided to States and EPA Regional Offices for the conduct of 10 additional courses reaching a total of 190 students.

In support of the delegation of more air quality management responsibilities to the States, EPA continued emphasis on self-study courses as a means of providing training to more air pollution personnel. During 1984, 984 students applied for the 23 self-study courses presently available.

As an additional means of developing qualified personnel, EPA supported 15 graduate traineeships/fellowships to employees of State and local air pollution control agencies. These awards are for both part-time and full-time graduate study in the field of air pollution control.

VII. CONTROL OF STATIONARY SOURCE EMISSIONS

A. NEW SOURCE PERFORMANCE STANDARDS (NSPS)

During 1984, NSPS were promulgated under Section 111 of the Clean Air Act (Act) for five new categories: metallic mineral processing plants,[1] synthetic fiber production facilities,[2] petroleum refinery equipment leaks,[3] flexible vinyl and urethane coating printing operation,[4] and petroleum dry cleaning.[5] The existing NSPS for lime manufacturing plants,[6] glass manufacturing plants,[7] steel plants (electric arc furnaces),[8] and secondary brass and bronze ingot production plants[9] were revised. Standards were proposed for five new categories: industrial boilers (NO_x, PM),[10], volatile organic liquid storage vessels,[11] wool fiberglass insulation manufacturing,[12] and onshore natural gas processing (2 NSPS)[13] Revisions were proposed for three source categories: kraft pulp mills,[14] metal furniture surface coating,[15] and auto coating plants, [Section 111(j) waivers].[16] The reviews of NSPS for copper smelters,[17] grain elevators,[18] and nitric acid plants[19] were completed. Three control techniques guideline documents were published for volatile organic compound equipment leaks from natural gas/gasoline processing plants, volatile organic compound fugitive emissions from synthetic organic chemical manufacturing, and polymers and resins manufacturing equipment. Standards development programs now underway are planned to result in the promulgation of 18 standards, the proposal of 12 standards, and completion of reviews for 4 existing NSPS during 1985.

B. NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP)

- Arsenic - Work on the proposed NESHAP under Section 112 of the Act covering glass manufacturing, high arsenic primary copper smelters, and low arsenic primary copper smelters is continuing with a promulgation planned in 1985.

- Benzene - A NESHAP for benzene emissions from coke oven by-product plants was proposed in 1984.[20] A NESHAP for benzene equipment leaks from fugitive sources was promulgated in 1984.[21] The proposed regulations for control of benzene emissions in maleic anhydride plants, ethylbenzene/styrene plants, and benzene storage facilities were withdrawn in 1984.[22] The withdrawal was based on the fact that public health risks for these sources were determined not to be significant.

- Asbestos - A rule was published in 1984 to repromulgate the asbestos work practice standards and reorganize the standard for clarity.[23] The enforceability of the work practice standards has been under question because work practice standards were not explicitly authorized under the Act until several years after publication of the asbestos NESHAP. Work continues on the review of the demolition and renovation provisions of the regulation. Any revisions that are necessary will be proposed in 1986.

- Mercury - The review of this standard was completed and a proposed revision to the NESHAP was published in 1984.[24] The proposed revision addressed recordkeeping and monitoring requirements for mercury-cell chlor-alkali plants.

- Vinyl chloride - Revisions to the vinyl chloride NESHAP are under development and will be proposed in 1985. The revision will redefine and clarify the relief value discharge part of the regulation.

- Chromium - A project was started in 1984 to develop a NESHAP for chromium. The NESHAP will limit chromium emissions from source categories that are determined to pose significant risks. The source categories identified as candidates for regulation include electroplating, cooling towers, utility boilers, industrial boilers, chromium chemical manufacturing, steel production, refactory manufacturing, sewage sludge incinerators, municipal incinerators, cement manufacturing, chromite ore refining, and ferrochromium production.

- Coke oven emissions - Standards development work continued in 1984 for coke oven emissions sources in the iron and steel industry. A proposed NESHAP for coke oven emissions is planned for 1985.

- Radionuclides - Standards proposed under Section 112 for the following source categories were withdrawn: (1) elemental phosphorus plants; (2) Department of Energy (DOE) facilities; (3) facilities licensed by the Nuclear Regulatory Commission and non-DOE Federal facilities; and (4) underground uranium mines. For the first three source categories, the Administrator determined that current practice adequately protects the public health. In the case of underground uranium mines, the standard was withdrawn because the EPA concluded that the standard did not meet the legal requirements of Section 112. At the same time, advance notices of proposed rulemaking were published concerning radon-222 emissions from underground uranium mines and from licensed uranium mills. Standards were subsequently issued for the first three categories as a result of a court order, and work was begun on a standard for uranium mines.

C. DELEGATION OF NSPS AND NESHAP

The EPA continued to make progress in 1984 in delegating responsibility for implementing the NSPS and NESHAP programs to the State and local air pollution control agencies. The number of applicable NSPS and NESHAP vary for each State or local agency depending on the types of source categories that either exist or are likely to be built in the future. At the end of 1984, 34 State and local agencies had accepted delegation of all applicable NSPS and 47 had accepted delegation of all applicable NESHAP. These numbers represent delegation of approximately 92 percent of applicable NSPS and 95 percent of applicable NESHAP nationwide.

D. BACT/LAER CLEARINGHOUSE

New or modified facilities that are to be constructed in areas of the country that are currently attaining the national ambient air quality standards are required by the Act to install best available control technology (BACT). In those areas of the country that have not yet achieved compliance with the air quality standards, new or modified facilities are required to meet the lowest achievable emission rate (LAER) for that particular type of source. Both BACT and LAER requirements are determined on a case-by-case basis. Often an air pollution control agency will need to establish BACT or LAER requirements for a source type that is completely new to them or for which they have had only minimal experience. In these cases, the permitting agency may not be knowledgable of the more recent advances in control technology for such sources and it is extremely helpful if the agency can refer to BACT or LAER determinations made by other control agencies.

The EPA established the BACT/LAER Clearinghouse several years ago in order to assist State and local air pollution control agencies by promoting the sharing of air pollution control technology information. The primary output of the Clearinghouse is an annual report of information about BACT/LAER determinations made by the various control agencies. The most recent report contains over 950 BACT/LAER determinations.[25] An updated compilation containing approximately 1050 determinations is scheduled to be distributed in 1985. The report is available in hard copy and through an automated system. The automated data base can be accessed by both the public and the private sectors.

VIII. STATIONARY SOURCE COMPLIANCE

A. GENERAL

The goal of the Clean Air Act is to protect public health and welfare and enhance the quality of the nation's air. The stationary source compliance program is designed to assure compliance with air emission standards by stationary sources of air pollution, including such major facilities as power plants, steel mills, smelters, and refineries. In addition to ensuring compliance with emission limitations contained in State implementation plans (SIP's), EPA and delegated States are responsible for ensuring that sources comply with new source performance standards (NSPS) and national emission standards for hazardous air pollutants (NESHAP).

The EPA closely monitors the compliance status of about 30,000 stationary sources of air pollution. Approximately 26,500 of these sources are SIP sources, about 2,500 are NSPS sources, and about 1000 are NESHAP sources. At the end of 1984, as has been the case since the late 1970's, the compliance rates were high and generally stable. The compliance status for the Federally-tracked stationary sources is the following:

	In Compliance	In Violation; Meeting Schedule	In Violation; No Schedule	Unknown
SIP (Class A)*	92.2%	1.6%	3.8%	2.4%
NSPS	88.5%	1.5%	5.3%	4.7%
NESHAP	90.9%	0.8%	4.5%	3.8%

The responsibility for the compliance monitoring of stationary sources lies principally with the States. In order to obtain information for purposes of determining compliance status or preparing a possible enforcement action or for other reasons, the States (and EPA) have the authority to enter and to inspect stationary sources. In 1984, the States conducted inspections of 21,465 Class A SIP, NSPS, and NESHAP sources.

The EPA overviews States' compliance monitoring activities and supplements the States' enforcement efforts to resolve violations of air quality regulations. In 1984, EPA conducted inspections, for purposes of overviewing or case development, of 1,684 Class A SIP, NSPS, and NESHAP sources.

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*A Class A SIP source is a stationary source with potential uncontrolled emissions, while operating at design capacity, equal to or greater than 100 tons per year of any regulated air pollutant.

The Clean Air Act provides a variety of administrative enforcement mechanisms for dealing with both special situations and relatively easily corrected violations. During 1984, EPA issued immediate compliance orders under Section 113(a) of the Act to 84 sources and issued delayed compliance orders under Section 113(d) to seven sources.

Section 120 of the Clean Air Act is an administrative remedy designed to recoup the economic benefit which may come from violating air pollution control regulations. Congress established the program in 1977, EPA promulgated regulations implementing Section 120 in 1980, and the D.C. Circuit Court of Appeals generally sustained the regulations in January, 1983. Prior to fiscal year (FY) 1984 (the period starting October 1, 1983, and ending September 30, 1984), implementation of the program was in its developmental stage and during this period EPA initiated only twenty Section 120 proceedings. Twenty-two Section 120 cases were initiated in FY 1984, more cases than in the three previous years combined.

The EPA is also authorized to file a civil complaint in federal district court to order a source to comply with applicable regulations, to pay civil penalties, or both. There were 56 civil actions filed in 1984 against stationary sources for violations of the Clean Air Act. As of January 1985, there was a total of 85 such actions pending with the U.S. District Courts. These judicial actions addressed a broad spectrum of violations including violations of SIP's, violations of federally-promulgated standards, and contempt actions for violations of judicial decrees.

One criminal indictment was entered in 1984 against a source for violations of visible emission limitations. In addition, four cases were referred to the Department of Justice for criminal prosecution.

A major focus of the stationary source compliance program is the effort to return to compliance those sources meeting the definition of a significant violator. The universe of sources covered by this program includes sources that are in violation of NESHAP and NSPS regulations and major SIP sources in violation of a SIP requirement located in a nonattainment area for the pollutant for which the source is in violation. For FY 1984, EPA identified 326 significant violators pending at the beginning of FY 1984 and by the end of the fiscal year 126 were returned to compliance, 51 were placed on an acceptable compliance schedule, and 92 had an enforcement action pending. With an expanded definition of a significant violator which now includes all Class A SIP sources in or impacting a nonattainment area for the pollutant for which the source is in violation, EPA has identified 513 such sources pending at the beginning of FY 1985. The States and Regional Offices have committed to resolve 390 of these significant violators by the end of the fiscal year.

An area of increasing focus by EPA, reflected in the large growth in the number of significant violators, is the regulation of sources of volatile organic compounds (VOC's). Such sources are major contributors to the ozone nonattainment problem and some emit compounds which are highly toxic in nature. In response to requirements contained in the 1977 Clean Air Act Amendments, many States adopted regulations requiring compliance of VOC sources on or before the end of 1982. Therefore, the effort to assure the initial compliance of VOC sources is relatively new. As with any new program, some basic problems need to be addressed, including the lack of an adequate VOC stationary source inventory, limited experience in determining compliance with complex VOC regulations, and inexperience with control of some VOC source categories. During 1984, EPA completed a major effort to identify all Class A VOC sources and began the process of verifying the compliance status of sources added to the VOC inventory. Building expertise in the VOC area is also an ongoing effort.

In 1984, the asbestos NESHAP was repromulgated, which allowed the stationary source compliance program to begin a major initiative to ensure demolition and renovation sites are in compliance with these regulations. The demolition and renovation of old buildings, often in highly populated urban areas, is a major source of asbestos exposure. Because of the large number of demolition sites, a strong State and EPA effort is necessary to the success of the program. On April 6, 1984, the stationary source compliance program issued an asbestos NESHAP strategy for ensuring compliance at demolition and renovation sites. The strategy addresses training, inspection techniques, enforcement mechanisms, and other aspects essential for a successful program of compliance. In 1984, since repromulgation, EPA initiated civil actions against 21 companies found in violation of asbestos regulations. At the end of 1984, three cases were concluded. Delegated States also conducted a high level of asbestos enforcement action during 1984.

On July 11, 1984, EPA issued a vinyl chloride NESHAP enforcement strategy which facilitates the development of civil complaints against violators of vinyl chloride regulations. EPA filed five civil actions during 1984 for violations of the vinyl chloride standards. At present, twelve enforcement actions for violation of these standards are pending in court.

B. LITIGATION

The following cases are examples of several significant enforcement actions which were concluded in 1984.

United States v. Kaiser Steel Corporation (C.D. Cal. Jan. 26, 1984)

A civil action was filed against the Kaiser Steel Corporation in May 1982 for visible emission standard violations at its blast furnace casthouses located at Fontana, California. At the conclusion of a lengthy trial, Judge Irving Hill found the violations to be "extremely serious," and imposed a civil penalty of $825,000. Judge Hill further concluded that "economic and technologic infeasibility" were not defenses to liability for Clean Air Act violations and that each blast furnace was a separate source of emissions each subject to a maximum penalty of $25,000 per day of violation.

United-States v. Jones & Laughlin Steel Inc. and The LTV Corporation

Contempt actions were filed on January 6 and 7, 1983, against Jones and Laughlin in Indiana, Pennsylvania, and Ohio U.S. District Courts alleging violations of three 1981 consent decrees. The violations of the consent decrees took place at the Aliquippa, Pittsburgh, East Chicago, Campbell, and Cleveland plants. A comprehensive settlement was reached in 1984 that included new schedules for the installation of controls and demonstrations of compliance. The settlement also assessed against Jones and Laughlin a penalty of $4 million and established a requirement to undertake projects which will yield environmental results beyond what are currently required by Federal and State law. Two of the decrees reflecting this settlement were entered in the Indiana and Pennsylvania courts in 1984. The third decree was not entered by the Ohio court. The government filed an appeal with the Sixth Circuit challenging the Ohio court's refusal to enter the settlement.

City of Providence, Rhode Island (D.R.I. June 8, 1984)

In this case, EPA sought enforcement of a 1977 consent decree in the District Court for Rhode Island. The decree required Providence to control particulate emissions from its sewage treatment plant. The United States negotiated a substantial civil penalty ($180,000) despite the court's initial statement that the defendant should be required to pay no more than $5,000. The United States' brief persuaded the court that it did not have authority to reduce the stipulated penalties in the original decree.

C. CONTINUOUS COMPLIANCE

In the past, the focus of the stationary source compliance program was to ensure that major sources of particulates and sulfur dioxide achieved initial compliance with Clean Air Act regulations, generally by either installing required control equipment or by switching to cleaner fuels. The more recent focus of attention, which will continue in the future, is addressing the continuous compliance problems of particulate and sulfur dioxide sources (while continuing to work to ensure the initial compliance of VOC sources.)

In 1984, EPA developed a strategy to assure continuous compliance by stationary sources. The strategy builds upon current use of on-site inspections as a major compliance monitoring method. It outlines a number of areas, such as unannounced inspections, better targeting of sources, and improved inspection techniques, in which inspections can be made more responsive to determining the compliance status of sources and assuring compliance on a basis more representative of day-to-day source operation. The strategy also calls for an increased use of continuous emissions monitoring (CEM) data, supported by a major EPA initiative to enhance CEM usage.

To implement this strategy, EPA has been conducting pilot studies to determine the most promising techniques to address the problem of assuring continuous compliance. In 1984, EPA completed the first phase of the Virginia pilot inspection system. The study, conducted in the Valley of Virginia region of the State, looked at methods to improve the effectiveness and efficiency of the inspection process. In 1985, EPA is expanding the Virginia pilot to cover the entire State to determine if benefits comparable to that achieved by the more limited pilot can be obtained. Also, EPA continued a continuous emission monitoring pilot in Region VII that provided methods and procedures for upgrading the national CEM program. The results of these pilots will allow EPA to issue needed technical guidance to the Regional Offices and the States. On October 5, 1984, EPA issued technical guidance on the review and use of excess emission reports submitted by sources with CEM systems.[1]

Also, EPA provided revised inspection frequency guidance to the States that provided them greater flexibility to target inspection resources to address their most significant air quality problems. A joint EPA, State, and local agency effort was initiated in 1984 to investigate the possibility of making further improvements to EPA's inspection frequency guidance. EPA also issued guidance on the use of unannounced inspections by EPA as a component of an overall inspection program.

D. TIMELY AND APPROPRIATE ENFORCEMENT RESPONSE

A major 1984 initiative was the development of guidance on what constitutes a "timely and appropriate" EPA/State enforcement response for significant air violators. This guidance, developed jointly with the States, is a first step toward clarifying the roles and expectations of the respective parties to the EPA/State partnership in the enforcement of air quality regulations for stationary sources. The guidance also provides timeliness for action, addresses EPA issuance of notices of violation, and discusses when penalties must be obtained.

E. CIVIL PENALTY POLICY

On September 12, 1984, the Office of Enforcement and Compliance Monitoring and the Office of Air and Radiation jointly issued a new Clean Air Act Stationary Source Civil Penalty Policy. This program-specific policy supersedes the general Civil Penalty Policy issued July 8, 1980, and applies to civil cases referred to the Department of Justice after October 12, 1984. In addition to procedures for assessing penalties based on the recapture of economic benefit, the policy contains procedures for assessing a component of the civil penalty that represents the severity of the violation. For the first time, the factors that are considered in assessing severity have been identified and dollar amounts assigned according to the size of each factor. The policy also describes procedures for mitigation of the severity, or "gravity," component if circumstances so dictate.

The general policy applies to most Clean Air Act stationary source violations. Some types of violations, however, do not fit the general policy framework. Therefore, the Policy contains four appendices with separate penalty assessment procedures for types of cases where penalties can not be calculated under the general policy. The appendices cover permit violations, asbestos demolition, vinyl chloride emission violations, and volatile organic compound emission violations where the source intends to comply by using low solvent technology.

F. COMPLIANCE BY FEDERAL FACILITIES

During 1984, Federal facilities demonstrated a good record of compliance with applicable air pollution regulations. As of the end of 1984, 307 (94 percent) of the 327 major Federal facilities met applicable emissions limitations. Of the 20 remaining facilities, 11 are meeting compliance schedules that will bring them into compliance, 6 are in violation and not yet on an acceptable schedule, and 3 are of unknown compliance status.

G. LIST OF VIOLATING FACILITIES

The list of violating facilities, under Section 306 of the Clean Air Act, is designed to prevent the Federal government from subsidizing certain Clean Air Act violators with contract, grant, or loan monies. No violators were listed under Section 306 of the Act in 1984.

IX. CONTROL OF MOBILE SOURCE EMISSIONS

A. INTRODUCTION

Control of motor vehicle emissions has been a Federal responsibility since 1968. The requirements of the Clean Air Act (CAA) relating to mobile sources have been subsequently refined several times, most recently in 1977. The Clean Air Act Amendments of 1977 established an ambitious regulatory program which addressed remaining problems in the motor vehicle emissions control program and bolstered efforts to attain and maintain the national ambient air quality standards for carbon monoxide (CO) and ozone (O_3). Below are listed some of the the mobile source provisions of the 1977 Act.

- A schedule was established for implementation of stringent emissions standards for automobiles--0.41 grams per mile (gpm) for hydrocarbons (HC), 3.4 gpm for CO, and 1.0 gpm for oxides of nitrogen (NO_x). The table below displays the level of control mandated by the standards.

New Light-Duty Vehicle Emissions

	Without Control	1977 CAA Standard	Percent Reduction
Hydrocarbons	8.8 gpm	.41 gpm	95%
Carbon Monoxide	87.0 gpm	3.40 gpm	96%
Oxides of Nitrogen	3.6 gpm	1.00 gpm	72%

- Similarly, the amendments tightened standards for emissions of the above-mentioned pollutants from heavy-duty engines.
- Standards for the control of particulate emissions from diesel engines were mandated.
- Areas not meeting CO and O_3 ambient air quality standards were required to implement motor vehicle inspection and maintenance (I/M) programs.

Since the enactment of the 1977 amendments, the Environmental Protection Agency has made steady progress toward achieving the Act's goals. The agency has made a number of modifications to its motor vehicle emissions standards in order to assure that they attain the goal of cleaner air as effectively and efficiently as possible. In 1984, EPA made significant progress toward the implementation of this program.

B. STANDARD SETTING

Heavy-Duty Vehicles

With the achievement of effective reductions of passenger car emissions, EPA has increasingly turned its regulatory focus toward the development of parallel standards for heavy-duty trucks and other commercial vehicles. Projections indicate that these vehicles will contribute an ever-increasing percentage of the mobile source emissions generated for the rest of this century. It is therefore important to establish standards for these vehicles to help insure better air quality.

Accomplishments in this area during 1984 include the following:

- EPA moved forward in its development of standards for particulate and NO_x emissions for heavy-duty diesel engines. Proposed regulations were published establishing a standard of 6.0 grams per brake horsepower-hour for NO_x and 0.60 grams per brake horsepower-hour for particulate emissions, starting in the 1987 model year.[1] The regulations also propose that the standards be tightened even further in 1990 with an averaging program for meeting particulate standards. Final promulgation of these rules is anticipated early in 1985.

- EPA prepared for the implementation of new and more stringent heavy-duty exhaust HC and CO and evaporative HC standards, taking effect in model year 1985. In order to assure that manufacturers were in a position to meet these standards, EPA provided them with extensive support on technological and test procedure issues.

- In order to ease manufacturers' transition to stricter standards, EPA commenced the development of noncompliance penalties for those engine families unable to meet the standards applicable to a given model year. This mechanism assures that no manufacturer benefits financially from noncompliance, and that technological laggards do not determine the stringency of standards for the entire industry. (This rulemaking was the first EPA action to feature an innovative process known as regulatory negotiation, in which all interested parties meet in an effort to settle their differences prior to initiation of the formal rulemaking process. The regulatory negotiation process proved to be extremely successful in this case.)

Light-Duty Vehicles

During 1984, the primary focus of EPA in the regulation of light-duty vehicles (LDV's) and light-duty trucks (LDT's) has been in the control of diesel particulate emissions. EPA promulgated a regulation delaying particulate emission standards for light duty cars and trucks from 1985 to 1987, in order to allow time for manufacturers to develop trap oxidizer technologies for these vehicles.[2] This action also delayed the diesel particulate emissions averaging regulations, which were applicable to the stricter standards, until 1987.

Other Vehicle Categories

EPA modified its emissions standards for jet aircraft engines in 1984, eliminating the production limit of 20 engines per year from the low production engine provisions of the aircraft standards.[3] This change allowed engine manufacturers more flexibility in their production schedules.

The EPA also moved forward in its study of railroad emissions, due to be published in 1985.

Fuels

In August 1984, EPA proposed a rule which would expedite the reduction of allowable lead in gasoline.[4] This action was prompted by accumulating evidence of the health and other effects associated with the presence of lead in the gasoline. The regulation will significantly reduce atmospheric lead contaminations, and consequently blood lead levels and related medical costs. In addition, it should significantly curtail consumer fuel switching activities, which undermine EPA's mobile source emission control efforts. Finalization of this rule is expected early in 1985.

In a related area, EPA continued to process applications for fuel additive regulations waivers, primarily for methanol blends, in 1984. This waiver process assures that new fuels do not harm emission control devices or cause vehicles to exceed applicable standards. This is expected to become an increasingly important area in response to the progressing lead phasedown program, as refiners experiment with various additives as substitutes for lead in vehicle fuel.

C. PREPRODUCTION COMPLIANCE

One of EPA's long-standing techniques for assuring compliance with motor vehicle emissions standards is the preproduction certification review program. Initiated in 1968, the program entails engineering review by EPA staff of engine families representing new vehicles to be sold in the United States. Steps in the process include submission by manufacturers of technical data about respective vehicles, emissions testing of prototypes by manufacturers, review of engineering data and test results by EPA, and, in certain cases, confirmatory testing of prototypes at EPA's laboratory facility in Ann Arbor, Michigan.

A series of regulatory reforms implemented over the last several years have made certification a much stronger and more efficient and flexible program. As a result of computerization, elimination of redundancy, and administrative streamlining, the program has retained its full effectiveness while easing the procedural burden to manufacturers.

D. INSPECTION/MAINTENANCE

An effective strategy for dealing directly with in-use emissions problems is the establishment of motor vehicle inspection and maintenance (I/M) programs. EPA's basic approach in this area was determined by the 1977 amendments to the Clean Air Act. Urban areas of the country which obtained an extension in the deadline for attaining the ambient air quality standards for automotive-related pollutants beyond 1982 are required by the Act to implement an I/M program. In 1984, EPA continued to promote the implementation of I/M programs in each locality where it is required by the Clean Air Act. By the end of the year, 43 of 52 areas had initiated I/M programs.

In order to assure that operating I/M programs actually achieve the planned emissions reductions, EPA initiated in 1984 a systematic I/M auditing plan. Auditing and thorough followup by Federal, State, and local officials will pinpoint and lead to correction of any major deficiencies in individual I/M programs.

E. MOBILE SOURCE ENFORCEMENT

The EPA mobile source enforcement program is directed primarily toward achieving compliance with motor vehicle emissions standards and fuel regulations as required by the Clean Air Act. The major goals and objectives are to: (1) assure that both new and in-use vehicles meet emissions standards; (2) assure that emissions control systems are not removed or rendered inoperative; (3) assure that harmful additives are not present in gasoline; (4) administer statutory and California emissions standards waivers; and (5) administer the statutory emissions warranties.

In order to accomplish these goals, EPA maintains a number of basic motor vehicle enforcement programs as described below.

Recall Program

Section 207(c) of the Clean Air Act authorizes EPA to order the recall of vehicles if a substantial number of any class of vehicles do not conform to emissions standards. During 1984, 1,206,900 vehicles were recalled either by direct order of EPA or as a result of an EPA investigation. In the same period, manufacturers voluntarily recalled 867,770 vehicles to correct emissions problems. EPA conducted a total of 35 recall investigations in 1984, and performed 661 tests of in-use vehicles at laboratory facilities in Springfield, Virginia and Ann Arbor, Michigan.

The recall program has traditionally focused on light-duty vehicle exhaust emissions. However, as new categories of emissions come under stringent control, the recall strategy must be applied to them. Therefore, in 1984, EPA began small-scale efforts toward implementing light-duty evaporative emissions and heavy-duty exhaust emissions recall programs.

Selective Enforcement Auditing

In order to assure that production vehicles are built in accordance with emissions standards, EPA conducts Selective Enforcement Audit (SEA) test programs at manufacturers' facilities. EPA has found that the SEA program encounters few failures because automobile manufacturers routinely test on a voluntary basis many more vehicles than are strictly required through SEA orders. Therefore, beginning in 1981, EPA changed its SEA policy to place greater reliance on manufacturer testing programs and less on EPA-mandated audits. In fiscal year 1984, EPA conducted 17 SEA test programs, including four at foreign manufacturers' facilities.

Unleaded Gasoline Enforcement Program

The EPA has responsibility for enforcing Section 211 of the Clean Air Act, relating to the regulation of fuels and fuel additives. One of the regulations under this section of the Act is aimed at protecting the catalytic converters on 1975 and later model year cars.

The EPA has established a nationwide fuels enforcement program to ensure that affected retail outlets comply with these regulations. This program includes sampling of the fuel at retail outlets by Regional EPA field inspectors and private or State inpectors under EPA contract in order to measure the fuel's lead content. EPA conducted 12,500 inspections under this program during 1984.

As mentioned before, proposed rules expediting the lead phasedown schedule are expected to take effect in 1985. These rules will create a demand for other additives which will have a potentially harmful impact on auto emissions. EPA expects that the proliferation of additives will create a need to monitor the composition of vehicle fuels even more closely than in the past.

Tampering/Fuel Switching

The EPA is also responsible for carrying out programs designed to deter tampering with vehicle emissions control systems or using leaded fuel in vehicles which require unleaded. Surveys undertaken by EPA have shown tampering and fuel switching to be continuing serious problems which undermine the emissions control performance of many in-use vehicles. The latest survey indicates that about 28 percent of the vehicle fleet is subject to gross tampering, and about 16 percent to fuel switching.

Federal efforts alone cannot effectively address these problems. Consequently, EPA has promoted the implementation of State and local antitampering enforcement programs. In 1984, nine local antitampering programs were set up as a result of this initiative.

F. IMPORTS

The control of emissions from imported vehicles has become a major issue in recent years. Due to various changes in consumer taste and the strength of the dollar in foreign exchange rates, vehicle imports have vastly increased their share of the U.S. auto market. Correspondingly, there has been a significant increase in the number of independent auto importers bringing cars into this country for resale. This has created several problems in regulating the emissions from these cars. In 1984, EPA received 8,500 applications and 27,400 inquiries concerning the importation of non-conforming autos into the U.S. In response, the EPA is modernizing its imports program to handle this increase in demand, and is revising its regulations to make the process work more smoothly and efficiently. A notice of proposed rulemaking addressing the problems created by this increased demand was in preparation in 1984.

X. LITIGATION

A. INTRODUCTION

Without question, the most important Clean Air Act case of the year was Chevron v. Natural Resources Defense Council (NRDC), [467 U.S. (1984); 52 USLW 4845]. Under the nonattainment provisions of the Clean Air Act, any "modified" source must undergo review and meet certain control requirements. A source is "modified" if its emissions increase. In this opinion, the Supreme Court held that EPA could legally allow States to exempt factories from "modification" review if an emissions increase at one facility within the factory was offset by emissions decreases at another. In effect, the opinion allows the entire factory to be treated as a "source" for new source review purposes. The court's opinion contains very broad language about the authority of agencies to interpret with binding effect the statutes they administer. It is likely to be an important precedent both for the Clean Air Act and for administrative law in general.

In a second Supreme Court opinion, Stauffer Chemical Corp. v. EPA (467 U.S. ____; 52 USLW 4022), the court let stand a lower court ruling that EPA could not designate employees of contractors as EPA "representatives" entitled to conduct inspections under Section 114 of the Clean Air Act. The court reached this decision not on the merits, but by applying against the Government the doctrine of "collateral estoppel," which generally forbids a litigant who has lost a case involving a legal question in one court from relitigating the same legal question against the same opposing party in any other court.

In addition to the two Supreme Court decisions described above, the Federal Courts of Appeals handed down 11 decisions involving the Clean Air Act in 1984. Of these, two involved the operations of the combined State and Federal mechanism for establishing "State implementation plans," ("SIP's") two involved the workings of the Act's "prevention of significant deterioration ("PSD") system, two involved measures for the control of sulfur oxides, and one involved the legal doctrine of "standing." Apart from these decisions, which all involved control of stationary sources of air pollution, 1984 also saw four decisions under the "mobile source" control provisions of Title II of the Clean Air Act. EPA won six of these decisions and lost four. The remaining decision, though mixed, was basically favorable to EPA.

B. STATIONARY SOURCE CASES

1. The SIP System

Probably the most important stationary source case in 1984 was Bethlehem Steel Corp. v. EPA, 742 F.2d. 1028 (7th Cir.). In this case, Judge Posner, reaching beyond the normal time limits on judicial review, examined EPA's conduct in approving most portions of an Indiana rule to control the "opacity" of emissions, but disapproving a 15-minute exemption from compliance. He ruled that, though EPA did have power to approve some parts of a State implementation plan and disapprove others, that power was analogous to the power of a State governor exercising "item veto" authority and could not be used to create a new regulatory command beyond the intent of the original authors. He found that EPA had acted beyond that limit in the case before him.

In a related case, Judge Posner found that EPA could not simply "decline to act" on a SIP revision submitted by a State, but would have to approve or disapprove it within a reasonable time. Indiana & Michigan Electric Co. v. EPA, 733 F.2d. 489 (7th Cir. 1984).

2. Review of New Sources and Major Modifications

In Hawaiian Electric Power Co. v. EPA, 723 F.2d. 1440 (9th Cir. 1984), the court upheld EPA's determination that a potential switch by a power company from low-sulfur to high-sulfur oil, resulting in an emissions increase, would be a "major modification" to the plant that would subject it to PSD review under 40 CFR 52.21.

In NRDC v. EPA (GATX Terminals), 723 F.2d. 761 (D.C. Cir. 1974), the D.C. Circuit upheld EPA's decision not to count the emissions from tankers moving to or from docking facilities as part of the docking facilities' emissions for purposes of new source review of those facilities. The court agreed with EPA's conclusion that counting vessel emissions in this manner was inconsistent with the Act's bar on review of "indirect sources" of air pollution. The court remanded to EPA for reconsideration the question whether emissions from docked vessels were so closely associated with the docking facilities' emissions that they should be included in them.

3. Sulfur Dioxide (SO_2) Control

In Air Pollution Control District of Jefferson County, Kentucky, v. EPA, 739 F.2d. 1071 (6th Cir. 1984), the court agreed with EPA's conclusion that interstate pollution that did not violate either an ambient standard or a PSD increment did not present a ground for relief under Section 126 of the Clean Air Act.

In Ohio Power Co. v. EPA, [729 F.2d. 1096], the court rejected industry challenges to the way EPA modeled power plant emissions, finding that the petitioners had not shown that the EPA decision was "arbitrary or capricious."

4. Other

In Edwards Engineering Corp. v. EPA, D.C. Cir. No. 83-2083 (decided May 16, 1984), the court held that a manufacturer of pollution control equipment lacked "standing" to challenge a new source performance standard that could affect it by affecting the market for its products.

C. MOBILE SOURCE CASES

In the most important mobile source case of the year, General Motors Corp. v. Ruckelshaus, 742 F.2d. 1561 (D.C. Cir. 1984), the D.C. Circuit, sitting en banc, addressed the provisions of the Clean Air Act that require cars to meet emissions standards for a "useful life" of 5 years or 50,000 miles. The court upheld EPA's position that it could compel the recall and repair of automobiles that had passed their statutory "useful life" period, as long as they had exceeded the applicable standards within that useful life period. The court reversed an earlier panel opinion rejecting EPA's position.

In Center for Auto Safety v. EPA, 747 F.2d. 1 (D.C. Cir.), however, the court rejected EPA's contention that, when acting to correct violations of auto emission standards, it could accept a manufacturers' offer to build cars that did better than the standards to "offset" the emissions of the violating vehicles, rather than ordering a recall and repair. The court found recall to be the only remedy authorized by the statute.

In CEDs Inc. v. EPA, 745 F.2d. 1092 (7th Cir.), the court found that EPA had authority under Section 114 of the Clean Air Act to inspect premises and records of a company that it suspected of selling devices used to disconnect auto emission control systems. It reversed a district court opinion to the contrary.

In American Methyl, Inc. v. EPA, 749 F.2d. 824, the D.C. Circuit held that EPA had no power (absent fraud or similar circumstances) to "withdraw" permission granted under Section 212 to use a fuel additive. EPA would have to restrict or forbid use by affirmative rulemaking under Section 211(c) instead.

D. DISTRICT COURT CASES

The most interesting district court litigation of the year involved EPA's establishment of standards for sources of radionuclide emissions under Section 112 of the Clean Air Act. In July, Judge Orrick of the Northern District of California ordered the Administrator to issue final radionuclide standards or delist radionuclides as a hazardous air pollutant. Sierra Club v. Ruckelshaus [84-0656 WHO]. In response, the Agency found that three of the four categories of sources for which regulations had been proposed did not present "significant risks" and, therefore, should not be regulated and that the fourth could not be regulated without additional notice and comment.

Judge Orrick subsequently found the EPA and the Administrator in contempt of court and ordered regulations issued for all four source categories. Sierra Club v. Ruckelshaus, (84-0565 WHO). The EPA initiated steps to comply with the order while also pursuing an appeal. Standards were signed by the Administrator covering DOE- and NRC-licensed facilities and elemental phosphorous plants, while work progressed on the standard for uranium mines.

Three other district court cases under the Clean Air Act also involved statutory deadlines. In State of New York v. EPA [No. 82-CIV-4695(S.D.N.Y.)], the court ordered EPA to reach a decision on whether or not to regulate polycyclic organic materials (POM's) under Section 112 of the Clean Air Act. In State of New York v. Ruckelshaus [21 Env. Rep. Cases 1721], the court ordered EPA to reach a final decision on petitions for relief against "interstate pollution" filed under Section 126 of the Clean Air Act. In NRDC v. Ruckelshaus [No. 84-758 (D.D.C. Sept. 14, 1984)], the court ordered EPA to issue certain standards for air emissions from trucks.

The EPA has complied or is complying with all three orders.

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16. ABSTRACT

The report addresses the progress made in the prevention and control of air pollution in 1984. It covers the areas of air quality trends and monitoring, development of air quality criteria and standards, the status of State Implementation Plans, the control of stationary and mobile source emissions, enforcement, and litigation. The report is the annual report of the Administrator of EPA to the Congress in compliance with Sections 313, 202(b)(4), and 306 of the Clean Air Act, as amended.

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